UTRGV | UT Health Rio Grande Valley | School of Medicine

Research Symposium 2023

INTERNATIONAL CONFERENCE ON HEALTH DISPARITIES: PSYCHIATRIC AND MEDICAL COMORBIDITIES RELATED TO OPIOID AND ALCOHOL USE DISORDERS (ICHD-RECOVER II)

MISSION EVENT CENTER

200 N Shary Rd, Mission, TX 78572

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Event Sponsored by the School of Medicine Research Office,
The University of Texas Rio Grande Valley

Dr. Angela Cook, *Interim Sr. Associate Dean of Research, Associate VP for Clinical & Translational Research*

Jennifer Cahn, *Director of Research Administration*

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Veronica Vera, *Sr. Research Services Coordinator*

Edith Ramos Kolahdouz, *Program Coordinator*

Aniella Olivarez Perez, *Program Coordinator*

WELCOME TO
THE 6th ANNUAL UTRGV SOM
Research Symposium

On behalf of our faculty, staff, and students, I am pleased to welcome you to the UTRGV School of Medicine's Sixth Annual Research Symposium. We are excited to bring this program to the Valley and to showcase the outstanding research done by investigators at the University as well as our national and international partners. The oral and poster presentations that you will experience today are examples of the excellent work that these researchers have completed. They provide an expansion of knowledge in these key disciplines and demonstrate the diligence and commitment of these individuals in their pursuit of science. With the theme of "International Conference on Health Disparities" this symposium aims to showcase the work done by our researchers from a broad array of disciplines (academia, community, health care) to identify gaps and/or solutions to respond to multi-faceted heath and health disparity issues impacting minority and underserved populations across the Nation and Worldwide.

One of the key missions of a medical school is the sponsorship and conduct of research activities, including basic, translational, and clinical research. It is through research that we engage our students in critical thinking and in enhancing scientific curiosity. Research serves as the basis for evidence on the quality and efficacy of clinical care and for enhancing patient safety. Discoveries made in the laboratories of our basic scientists assist in the understanding of mechanisms in both health and disease and offer the foundation for translating these findings into clinical interventions. Research provides public visibility for a medical school and contributes to its reputation as an institution of higher learning.

It is with these key principles in mind that I once again welcome you to this Research Symposium. Thank you for attending and for participating with us in this important scholarly activity. Please enjoy the day and the program.

Michael B. Hocker, MD, MHS
Dean, School of Medicine

2023 Symposium Committee Members

Scientific Program Planning Committee:

Dr. Ihsan Salloum, Committee Chair, Professor & Chair, Neuroscience, SOM
Dr. Andrew Tsin, Co-Chair, Professor, Neuroscience, SOM
Dr. Luis Torres-Hostos, Dean, School of Social Work, UTRGV
Dr. Dae Kim, Associate Professor, Immunology & Microbiology, SOM
Dr. Adela Valdez, Associate Dean, SOM
Dr. Megan Keniry, Associate Professor, Dept. of Biology, School of Science
Dr. Juan Lopez Alvarenga, Assistant Professor of Research, Human Genetics, SOM
Dr. Beatriz Bautista, Associate Professor, School of Nursing
Dr. Subhash Chauhan, past Committee Chair, Immunology & Microbiology, SOM
Dr. Kevin Aranguri, Resident, PGY2, SOM
Ms. Karen R. Rodriguez, Data Coordinator, Behavioral Health Solutions

Event Planning Committee:

Mr. Jorge Teniente, Chair, Director of Special Programs, SOM Research Office
Mrs. Aniella Perez, Co-Chair, Program Coordinator, SOM Research Office
Mrs. Edith Ramos Kolahdouz, Program Coordinator, SOM Research Office
Dr. Jennifer Cahn, Grant Research Officer, SOM Research Office
Mrs. Stephanie Sharpe, Access Services Librarian, SOM
Mr. Loren Clark, Program Manager, Population Health & Biostatistics
Ms. Rosa Pirela Mavarez, Research Associate I, Human Genetics, SOM
Dr. Mohammed Sikander, Assistant Professor, Dept. of Immunology & Microbiology
Dr. Noe Garza, Associate Research Scientist, Neuroscience, SOM
Dr. Kevin Aranguri, Resident, PGY2, SOM
Ms. Sonal Jha, SOM Medical Student, MS2

Finance Planning Committee:

Dr. Angela Cook, Associate VP for Clinical & Translational Research, Interim Sr. Associate Dean of Research, SOM Research
Dr. Ihsan Salloum, Chair, Department of Neuroscience & Scientific Program Planning Committee Chair
Mr. Jorge L. Teniente, Chair of the Event Planning Committee, SOM Research Office
Mr. Travis McAlpine, Senior Director of Development, UTRGV
Mrs. Veronica Vera, Senior Research Service Coordinator, SOM Research Office
Mr. Rene Leonhardt, Dept. Administrator, SOM Research Office
Mrs. Aniella Perez, Program Coordinator, SOM Research Office

PROGRAM SCHEDULE

FRIDAY, SEPTEMBER 8, 2023

7:45-8:30 AM **LOBBY**	**REGISTRATION + NETWORKING BREAKFAST**
8:30-8:45 AM **RUBY RED BALLROOM**	**WELCOME & OPENING REMARKS** **Ihsan Salloum, M.D., MPH**, Director, Institute of Neuroscience, UTRGV **Can Saygin, Ph.D.,** Sr. Vice President for Research, UTRGV **Michael Hocker, M.D., MHS,** Dean, School of Medicine, UTRGV; Sr. Vice President, UT Health RGV
8:45-9:35 AM **RUBY RED BALLROOM**	**KEYNOTE LECTURE 1** **Carlos Blanco, M.D., Ph.D.** *Current Status of Substance Use Research: A view from NIDA*
9:35-10:25 AM **RUBY RED BALLROOM**	**KEYNOTE LECTURE 2** **Jonathan Jackson, Ph.D.** *The Challenge of Health Equity in Addressing Health Disparities*
10:25-10:35 AM **LOBBY**	***BREAK***
10:35-11:35 AM **RUBY RED BALLROOM**	**SYMPOSIUM SESSION 1 (Concurrent)** **Ihsan Salloum, M.D.** Director, Institute of Neuroscience, UTRGV **Subhash Chauhan, Ph.D.,** Professor, Immunology & Microbiology, UTRGV **Kelsey Baker, Ph.D.,** Assistant Professor of Neuroscience, UTRGV
10:35-11:35 AM **LEMON HALL**	**Research Admin Workshop (for all)** **Jennifer Cahn, Ph.D.,** Director of Research Administration, SOM Research Office **Mrs. Veronica Vera**, Sr. Research Services Coordinator, SOM Research Office
10:35-11:35 AM **MANDARIN HALL**	**ORAL PRESENTATIONS- SESSION 1** ***Detailed info on these sessions start on pg. 9 *** **1. Elvira Alanis** **2. Felipe Andres Piedra, Ph.D.** **3. Mariana Mendez** **4. Sheema Khan, Ph.D.**
11:35 AM-12:35 PM **VALENCIA HALL**	**POSTER SESSION #1** *Judges will score posters from* ***Undergraduate, Graduate, Fellow, Staff, and Faculty Categories.***
12:35-1:15 PM **RUBY RED BALLROOM**	**NETWORKING LUNCH**

FRIDAY, SEPTEMBER 8, 2023

1:15-2:05 PM
RUBY RED BALLROOM

KEYNOTE LECTURE 3
John R. Kelly, Ph.D. -*Expanding the Framework, Impact, and Cost-Effectiveness of Treatment through the Use of Recovery Support Services*

2:05-3:05 PM
RUBY RED BALLROOM

SYMPOSIUM SESSION 2
Luis Torres-Hostos, **Ph.D.,** Dean, School of Social Work, UTRGV
Linda Nelson, DNP
Social Determinates of Health: Navigating Health Care Access in the Rio Grande Valley
Mr. Eduardo Olivarez, Administrator, Hidalgo County Health Department
Substance Abuse and Mental Health: A Public Health Perspective

2:05-3:05 PM
LEMON HALL

Children Mental Health Session
Adolescent Substance Use Disorders
Diana Chapa, M.D., Chair, Department of Psychiatry, UTRGV
Cynthia Garza, PsyD, Assistant Professor, Department of Psychiatry, UTRGV
Alcides Amador, M.D., Assistant Professor, Department of Psychiatry, UTRGV

2:05-3:05 PM
MANDARIN HALL

ORAL PRESENTATIONS- SESSION 2
1. Anthony Alanis
2. Mark Lavering
3. Prakhar Jain
4. Ruayda Bouls

3:05-3:15 PM
LOBBY

BREAK

3:15-4:15 PM
RUBY RED BALLROOM

Scholars Oral Presentations – Session 1
Jorge Sanchez Ruiz, M.D., M.S.
Dissecting the clinical and genetic contribution of bipolar disorder to medical comorbidity
Cristina Banuelos, Ph.D.
The Status of Inhibitory Neuronal Populations in Normal Cognitive Aging

3:15-4:15 PM
LEMON HALL

COMMUNITY ENGAGEMENT SESSION 2
Christian Corrales, Ed.D.
Transforming The RGV Through Community Engagement: A Cross Cutting Priority at UTRGV **Nathalie Chacon, M.D., Ph.D.**
The Role of Physician Assistant Students in Empowering Teenager's Health
Noe Garza, DDS, MPH, DPH
Associate Research Scientist, Neuroscience, UTRGV

3:15-4:15 PM
MANDARIN HALL

ORAL PRESENTATIONS- SESSION 3
1. Moises Cisneros
2. Sara M. Reyna, Ph.D.
3. Satish Kumar, Ph.D.
4. Shabnam Malik, Ph.D.

4:15-5:15 PM
VALENCIA HALL

POSTER SESSION #2
Judges will score posters from
Undergraduate, Graduate, Fellow, Staff, and Faculty Categories.

4:15-5:15 PM **LEMON/ MANDARIN HALL**	**Scholar Groups meet with Dr. Jonathan Jackson & Dr. Edward Nunes**
5:15- 8:00 PM **LOBBY**	**NETWORKING RECEPTION** Complimentary Hors d'oeuvres and drinks will be served

SATURDAY, SEPTEMBER 9, 2023

7:45- 8:30 AM **RUBY RED BALLROOM**	**REGISTRATION + NETWORKING BREAKFAST**
8:30-8:45 AM **RUBY RED BALLROOM**	**OPENING REMARKS** **Ihsan Salloum, M.D. MPH, Scientific Chair**
8:45-9:35 AM **RUBY RED BALLROOM**	**KEYNOTE LECTURE 4** **Edward V. Nunes, M.D. -Columbia University** *Medication treatment for opioid use disorder--What does depression have to do with it?*
9:35-10:35 AM **RUBY RED BALLROOM** **9:35-10:35 AM** **LEMON HALL**	**SYMPOSIUM SESSION 3** **Robert Guevara, M.D.-** Medical Director, Texas Tropical **& Adam De La Torre-** Clinical Director, Texas Tropical *Efforts to Address the Opioid Epidemic at Tropical Texas Behavioral Health* **Alan Francis, Ph.D.-** Asst. Professor of Neuroscience- UTRGV **Ms. Omoshola Kehinde** *Accessing opioid overdose knowledge among college students: A pilot study.* **Research Administration Workshop for Scholar Trainees** **Jennifer Cahn, Ph.D.,** Director of Research Administration, SOM Research Office **Veronica Vera,** Sr. Research Services Coordinator, SOM Research Office
10:35-10:45 AM **LOBBY**	**BREAK**
10:45-11:45 AM **RUBY RED BALLROOM**	**Scholar Trainee Oral Presentations 2** **Whitney Cordoba-Grueso, M.D.** *Social Networks, Substance Use and Psychiatric Comorbidities: a series of epidemiological studies exploring the Intersection of health behaviors and mental health in the US* **David Martinez Garza, M.D.** *The Use of Biomarkers in the treatment of patients with alcohol use disorder* **Andres Trevino Alvarez, M.D.** *Metabolism and Mental Health: A Special Aim to FGF21*
10:45-11:45 AM **LEMON HALL**	**Community Engagement, Population Health & Alzheimer's Disease** **Gladys Maestre**, **M.D., Ph.D.,** Director, Alzheimer's Disease Resource Center, UTRGV **Silvia Mejia-Arango**, **Ph.D.,** Assistant Professor of Neuroscience, UTRGV **Jose Melgarejo**, **M.D., Ph.D.,** Assistant Professor of Neuroscience, UTRGV

10:45-11:45 AM **MANDARIN HALL**	**ORAL PRESENTATIONS- SESSION 4** **1. Ryan Bialaszewski** **2. Vamsikalyan Borra, M.D.** **3. Yong-Chan Kim, M.D.** **4. Mohammed Sikander, Ph.D.**
11:45 AM-12:45 PM **LEMON HALL**	**Trainee Oral Presentations 3** **Melissa Solares Bravo, M.D.** *Unmasking Shared Genetic Correlations between Thyroid Dysfunction and Bipolar Disorder* **Florida Owens** *The Role of Epigenetic and Immune Factors in Opioid and HIV-induced Neuropathology*
11:45 AM-12:45 PM **MANDARIN HALL**	**Community Engagement- AHEC Program** **John Ronnau, M.D., Xavier Duran, Lizette Ingle, & Miguel Jimenez** *Reducing health disparities in the RGV: AHEC Program impact*
12:45- 1:30 PM **RUBY RED BALLROOM**	**NETWORKING LUNCH**
1:30-2:20 PM **RUBY RED BALLROOM**	**KEYNOTE LECTURE 5** **Kathleen Brady, M.D., Ph.D.** *The Relationship Between Stress and Substance Use Disorders*
2:20-3:20 PM **RUBY RED BALLROOM**	**Symposium Session 4** **Manuel Gardea Resendez, M.D.** *Antidepressants that increase mitochondrial energetics may elevate risk of treatment-emergent mania* **Alfredo Cuellar Barboza, M.D.** *Clinical and Genetic Features of Patients With Bipolar Disorder From Latin America* **Ney Alliey Rodriguez, M.D.,** Assistant Professor of Neuroscience, UTRGV
2:20-3:20 PM **LEMON/ MANDARIN HALL**	**Special Session- Scholar Trainees meet & greet with Dr. Jonathan Jackson & Dr. Edward Nunes**
3:20-3:30 PM **LOBBY**	**BREAK**
3:30-4:00 PM **RUBY RED BALLROOM**	**AWARD CEREMONY**

POSTER EXHIBIT – Valencia Hall

FRIDAY SEPTEMBER 8, 2023

8:00 AM- 5:00 PM	**Viewing available for Poster Exhibit** **Exhibitor's booths open**
11:45-12:45 PM	**POSTER SESSION 1** **Judging for all High School, Undergraduate Students, Graduate Students, Staff, Post-Doc/ Fellows, and Faculty**
4:30-5:30 PM	**POSTER SESSION 2-** **Judging for all Medical Students & Medical Residents**

SATURDAY SEPTEMBER 9, 2023

8:00 AM- 5:00 PM	Viewing available for Biomedical Posters Exhibit

Exhibitor's booths will be in located in the Poster Exhibit Room:

- **Lab Animal Resources- UTRGV**
- **Institute of Neuroscience- UTRGV School of Medicine**
- **Nikon**
- **Eppendorf**

Biomedical Research Oral Presentations - Concurrent Session 1

September 8th, 10:35-11:35 AM, MANDARIN HALL

Moderator: Dr. Juan C. Lopez Alvarenga

Elvira Alanis *Faculty*	Rational Design of an Antimicrobial Peptide
Felipe A. Piedra *Faculty*	*Nurturing the Environment: Enhancing PET-Plastic Degradation by a Miracle Microbe*
Mariana Mendez *Staff*	Impact of Fiber-Rich Foods on Glucose Levels in Relation to Liver Fat Infiltration: Preliminary results.

Biomedical Research Oral Presentations - Concurrent Session 2

September 8th, 2:05 -3:05 PM, MANDARIN HALL

Moderator: Dr. Mohammed Sikander

Anthony Alanis *Medical Student*	Treatment Strategies for Metabolic Associated Fatty Liver Disease (MAFLD) in Childhood: A Systematic Review & Meta-Analysis
Mark Lavering *Medical Student*	Submental Intubation in Oral Maxillofacial Surgery: A Case Report and Review of Indications and Complications
Prakhar Jain *Medical Student*	Signs of Rheumatoid Arthritis with Negative Serum Markers: A Diagnostic Challenge
Ruayda Bouls *Medical Student*	Results from an Association-Scan of the Extended MHC-class-II Region Establish that DQ Allotypes and Race Independently Influence the Risk of FVIII Inhibitor Development in Hemophilia-A Patients

Biomedical Research Oral Presentations - Concurrent Session 3

September 8th, 3:15-4:15 PM, MANDARIN HALL

Moderator: Ms. Staci Eaton

Moises Cisneros *Staff*	Effective Management and Implementation of a Coordinated Health Program - The STEPS SNAP-Ed Experience
Sara M. Reyna *Faculty*	Triterpenoid CDDO-EA Protects from Obesity and Insulin Resistance in an Animal Model of Type 2 Diabetes
Satish Kumar *Faculty*	Neurocellular ER Stress Response in Alzheimer's Disease and Related Dementias (ADRD) Risk
Shabnam Malik *Faculty*	Studying the molecular mechanism of hepatocellular carcinoma

Biomedical Research Oral Presentations - Concurrent Session 4

September 9th, 10:45 -11:45 AM, MANDARIN HALL

Moderator: Dr. Juan C. Lopez Alvarenga

Ryan Bialaszewski *Medical Student*	Perceived Outcomes of Periacetabular Osteotomy (PAO): a Social Media Analysis
Sheema Khan *Faculty*	Targeted Treatment for KRAS12D For PDAC Treatment
Vamsikalyan Borra *Resident*	Endophthalmitis in an Elderly Patient - A Case of Delayed Transfer and Successful Management
Yong-Chan Kim *Resident*	Managing Diffuse Alveolar Hemorrhage in a Critical Care Setting
Mohammed Sikander *Faculty*	Targeting β-catenin signaling pathway for cervical cancer therapy

SPECIAL THANKS!

Abstract Reviewers

Presentation Judges

Oral Session Moderators

Staff Volunteers

Student Volunteers

On behalf of the 2021-22 UTRGV SOM Research Symposium Scientific and Event Planning committees, we thank each of you who attended the conference. A special thanks to The Office of the Associate Dean of Research at UTRGV-SOM, NIH-NIDA, UTRGV's Department of Neuroscience, Origins Behavioral Healthcare, The City of Mission, and all our donors and sponsors.

Funding for this conference was made possible (in part) by 1 R13 DA056203-01 from the National Institute on Drug Abuse (NIDA). The views expressed in written conference materials or publications and by speakers and moderators do not necessarily reflect the official policies of the Department of Health and Human Services; nor does mention by trade names, commercial practices, or organizations imply endorsement by the U.S. Government.

A special thank you to our Sponsors

Hypothesis Partners:

Origins Behavioral HealthCare provides comprehensive and individualized substance use and mental health disorder treatment programs for adults, including those with co-occurring disorders. Our treatment approach integrates contemporary addiction medicine and evidence-based clinical strategies with a profound immersion in timeless recovery principles. As one of the nation's premier behavioral health organizations, Origins embraces both the patient and the family system in order to provide a complete and thorough recovery experience.

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2023 KEYNOTE SPEAKERS

Carlos Blanco, M.D.

Director, Division of Epidemiology, Services, and Prevention Research at the National Institute on Drug Abuse (NIDA)

Dr. Blanco has over 30 years of experience as clinician, researcher and administrator in Federal, State and University-based systems. He is the Director of the Division of Epidemiology, Services and Prevention Research at the National Institute on Drug Abuse (NIDA), a component of the National Institutes of Health (NIH). His goal is to advance the understanding of psychiatric disorders and to develop and implement of equitable learning healthcare systems. His pioneering work on the epidemiology, prevention and treatment of psychiatric disorders has shaped national thinking and guided the development and implementation of large research initiatives of the National Institutes of Health (NIH). Dr. Blanco is an elected member of the National Academy of Medicine and the recipient of multiple leadership and research awards, including the Van Ameringen, Senior Health Services and Simon Bolivar Awards of the American Psychiatric Association, the Lifetime Achievement American Society of Hispanic Society, the Research Award of the New York Council on Problem Gambling and the NIH Director's Award. He is the author of over 350 peer-reviewed scientific articles.

Kathleen T. Brady, M.D., Ph.D.

Vice President for Research,
Medical University of South Carolina, Department of Psychiatry and Behavioral Sciences

Dr. Brady is an experienced clinical and translational researcher and has been conducting scientific investigations and clinical work in the field of addictions and psychiatric disorders for over 30 years. Her research focuses on pharmacotherapy of substance use disorders, comorbidity of psychiatric disorders and addictions (e.g., posttraumatic stress disorder and bipolar disorder), gender differences and women's issues in addictions, and the neurobiologic connections between stress and addictions. She has received numerous federal research grants and has published over 400 peer-reviewed journal articles and co-edited 10 books. She is the Principal Investigator of MUSC's Clinical and Translational Science Award (CTSA), Principal Investigator of the Southern Consortium Node of the NIDA-funded Clinical Trials Network and Director of MUSC's Women's Research Center. Her dedication to furthering research careers has attracted a number of junior investigators and clinicians. She is the former Vice President for Research at the Medical University of South Carolina. She has served at the President of the Association for Medical Education and Research in Substance Use Disorders (AMERSA), the American Academy of Addiction Psychiatry (AAAP) and is the immediate past president of International Society of Addiction Medicine (ISAM).

2023 KEYNOTE SPEAKERS

Jonathan Jackson, Ph.D.

Founding Director,
Community Access, Recruitment, and Engagement (CARE) Research Center at Massachusetts General Hospital and Harvard Medical School

Jonathan Jackson, PhD, is the Executive Director of the Community Access, Recruitment, and Engagement (CARE) Research Center at Massachusetts General Hospital and Harvard Medical School. CARE investigates the impact of diversity and inclusion on the quality of human subjects research and leverages deep community entrenchment to build trust and overcome barriers to clinical trial participation. His research focuses on midlife and late-life health disparities in clinical settings that affect underserved populations. Dr. Jackson also works as a cognitive neuroscientist, investigating the early detection of Alzheimer's disease, particularly in the absence of overt memory problems. He has become a well-known representative to underserved communities and dozens of affiliated organizations, particularly regarding participation in clinical research. Dr. Jackson serves on the leadership team of several organizations focused on community health, and has written guidance for local, statewide, and national groups on research access, engagement, and recruitment.

John R. Kelly, Ph.D.

Elizabeth R. Spallin Associate Professor of Psychiatry in Addiction Medicine, Harvard Medical School
Founder/ Director, Recovery Research Institute, Massachusetts General Hospital

Dr. Kelly is the Elizabeth R. Spallin Professor of Psychiatry in Addiction Medicine at Harvard Medical School – the first endowed professor in addiction medicine at Harvard. He is also the Founder and Director of the Recovery Research Institute at the Massachusetts General Hospital (MGH) and the Associate Director of the Center for Addiction Medicine (CAM) at MGH. Dr. Kelly is a former President of the American Psychological Association's (APA) Society of Addiction Psychology, a founding member and inaugural President of the American Board of Addiction Psychology, a Fellow of the APA, and a Diplomate of the American Board of Professional Psychology. He has served as a consultant to U.S. federal agencies and non-federal institutions, as well as foreign governments, the United Nations and the World Health Organization. He also has published over 200 peer-reviewed articles, reviews, chapters, and books in the field of addiction medicine, and was an author on the U.S. Surgeon General's Report on Alcohol, Drugs, and Health. He has won numerous state, national, and international lifetime achievements and distinguished scientist awards for his work. His clinical and research endeavors have focused on addiction treatment and the recovery process, mechanisms of behavior change, and reducing stigma and discrimination among individuals suffering from addiction.

2023 KEYNOTE SPEAKERS

Edward V. Nunes Jr., M.D.

Professor of Psychiatry, Division on Substance Use Disorders, Department of Psychiatry, Columbia University Irving Medical Center
Research Psychiatrist, New York State Psychiatric Institute

Dr. Nunes is Professor of Clinical Psychiatry at Columbia University College of Physicians and Surgeons and the New York State Psychiatric Institute (NYSPI), where he has spent his career conducting research on the development of behavioral and pharmacological treatments for cocaine- and opioid-dependent patients and on the evaluation and treatment of co-occurring psychiatric disorders among substance-dependent patients. He has published over 150 peer-reviewed articles and chapters. He received his BA from Dartmouth College in psychology in 1977 and his MD from University of Connecticut in 1981 and completed residency training in Psychiatry (1985) and a postdoctoral fellowship in clinical psychopharmacology research (1988) at Columbia University. Dr. Nunes has been a Principal Investigator since 2000 in the NIDA Clinical Trials Network (Greater New York Node), through which he has become deeply involved in the translation and dissemination of evidence-based treatments and the design of treatment research in community-based treatment settings. He is also extensively involved in mentoring junior investigators, particularly physicians and other clinicians, towards careers in research on substance use disorders. He has been a regular participant in NIH peer review and served a term as chair of the Treatment Research Review Committee at NIDA. Currently, he serves as Chairman of the New York State Psychiatric Institute Institutional Review Board and serves on the American Board of Addiction Medicine, which is focused on expanding the pool of physicians with expertise in the addictions through training and certification.

INVITED SPEAKERS

Alcides Amador, MD
Psychiatrist, UT Health RGV Behavioral Health

Ney Alliey-Rodriguez, MD
Assistant Professor, UTRGV SOM Neuroscience

Kelsey Baker, PhD
Assistant Professor, UTRGV SOM Neuroscience

Diana Chapa, MD
Chair, Psych Neuro & Optometry ISU, UTRGV SOM; Psychiatrist, UT Health RGV Behavioral Health

Nathalie Chacon, M.D., Ph.D.
Clinical Assistant Professor at The University of Texas Rio Grande Valley

Christian Corrales, Ed.D.
Assistant Vice President of Community Engagement, The University of Texas Rio Grande Valley

Adam De La Torre, MS, MSHS, LPC, LCDC-I
Director of Substance Use Disorder Services at Tropical Texas Behavioral Health

Alan Francis, Ph.D.
Assistant Professor of Medicine, UTRGV SOM Institute of Neuroscience

Manuel Gardea Resendez, M.D.
Faculty, Universidad Autónoma De Nuevo León

Cynthia Garza, PsyD
Clinical Psychologist at UT Health RGV Multispecialty (Harlingen) & UT Health RGV Primary Care (Laguna Vista)

Noé Garza, DDS, MPH, DPH
Associate Research Scientist- UTRGV SOM Institute of Neuroscience

Robert Guevara, MD
Psychiatrist, Tropical Texas Behavioral Health

Gladys E. Maestre, MD, PhD
Director, Alzheimer's Disease Resource Center for Minority Aging Research ;Professor of Medicine, UTRGV SOM Institute of Neuroscience

Siliva Mejia-Arango
Assistant Professor of Neuroscience for UTRGV SOM

Linda Nelson, DNP
Doctor of Nurse Practice (DNP), RN, pediatric nurse practitioner and senior director of Clinical Operations for the UTRGV School of Medicine and UT Health RGV

Mr. Eduardo Olivarez
Chief Administrative Officer Hidalgo County Health and Human Services

John Ronnau, M.D., PhD
Senior Associate Dean, Community Health Partnerships, UTRGV SOM

SCHOLAR TRAINEE SPEAKERS

Cristina Banuelos, Ph.D.
Medical Science Liaison; Research Scientist, National Institute on Aging

Whitney Cordoba-Grueso, M.D.
Doctoral Student, Indiana University Bloomington - Department of Epidemiology and Biostatistics

David M. Garza, M.D
Fellow – Massachusetts General Hospital

Helen Hemley
Administrative Director, Massachusetts General Hospital

Ms. Omoshola Kehinde
Graduate Research Assistant at University of Missouri-Columbia

Florida Owens
Biomedical Sciences PhD Student at Florida International University - Herbert Wertheim College of Medicine

Brandi Quintanilla
Student at West Virginia, School Of Osteopathic Medicine

Jorge A. Sanchez-Ruiz
Mayo Clinic - Rochester · Department of Psychiatry & Psychology
Doctor of Medicine

Melissa Solares-Bravo
Research Fellow at Mayo Clinic Department of Psychiatry and Psychology

Andres M. Treviño Alvarez, MD
Psychiatrist; Visiting Postdoctoral Fellow at NIH-NIDDK

ORAL PRESENTATIONS

FACULTY CATEGORY

Neurocellular ER Stress Response in Alzheimer's Disease and Related Dementias(ADRD) Risk

Kumar, S.1; Aceves M.1; Granados, J. C.1; Leandro, A. C.2; Peralta, J. M.2; Williams-Blangero, S.1,2; Curran, J.C.2; Blangero, J.2
1) Department of Human Genetics and South Texas Diabetes and Obesity Institute, University of Texas Rio Grande Valley School of Medicine, McAllen, Texas – 78504, USA. 2) Department of Human Genetics and South Texas Diabetes and Obesity Institute, University of Texas Rio Grande Valley School of Medicine, Brownsville, Texas – 78520, USA.

Background: Alzheimer's Disease (AD) pathology, characterized by neurodegeneration, amyloid-β (Aβ) plaques, and intracellular tangles of hyperphosphorylated Tau, starts in the entorhinal cortex and then spreads to the hippocampus and cerebral cortex. The presence of AD pathology in the hippocampus is strongly correlated with cognitive decline. The hippocampus is also one of the major sites of adult neurogenesis in the brain and accumulating evidence nowsuggests that adult hippocampal neurogenesis (AHN) that occurs throughout life (albeit declining with age) is essential for cellular homeostasis and hippocampus-dependent cognitive functions, and is severely impaired in ADRD patients. However, the causation of impaired AHN in ADRD patients and its contribution to ADRD-related cognitive decline remains poorly understood. Studies of postmortem AD brain showed elevated levels of endoplasmic reticulum (ER) stress. While the accumulation of Aβ and intracellular neurofibrillary tangles may primarily contribute to ER stress by disruption of Ca2+ and protein homeostasis and the resulting unfolded protein response (UPR) potentially alters AHN by mechanisms yet to be fully understood.
Methods: To study the ER stress-associated neurocellular response and its effects on neurocellular homeostasis and neurogenesis, we performed ER stress challenge using Thapsigargin (TG), a specific inhibitor of sarco/endoplasmic reticulum Ca2+ ATPase (SERCA), on induced pluripotent stem cell (iPSC) derived neural stem cells (NSCs) of two individuals of our Mexican American Family Study (MAFS). We have previously shown that our iPSC-derived NSCs are transcriptionally akin to dorsal neuroepithelium that give rise to the majority of the central nervous system and are a relevant cell type to study developmental and adult neurogenesis. Both pre- and post-ER stress-challenged NSCs were multi-dimensionally phenotyped by quantitative high-content screening and genome-wide mRNA sequencing (mRNAseq) analysis.
Results: The high-content phenotypic analysis of the pre- and post-ER stress-challenged NSCs shows evidence of upregulated UPR, a decline in NSC proliferation, an increase in apoptosis, and cellular oxidative stress in post-ER stress-challenged NSCs. A total of 2,300 genes were significantly (moderated t statistics FDR corrected p-value ≤ 0.05 and Fold Change absolute ≥ 2.0) differentially expressed (DE) between pre- and post-ER stress-challenged NSCs. The DE genes showed significant enrichment in protein export, DNA replication, protein processing in ER, cell cycle, and apoptosis KEGG pathways. All three UPR-associated (PERK, ATF6, and IRE1) pathways were significantly upregulated. Due to the short G1 phase, activated NSCs rely on higher expression of CDT1 and CDC6 licensing factors and MCM complex for timely DNA duplication during the cell cycle, ER stress-induced activation of UPR down-regulated CDT1 licensing factor and MCM complex genes in ER stress-challenged NSCs and induced G1 phase cell cycle arrest. The ER stress-challenged NSCs also showed activation of CHOP-mediated apoptosis and down-regulation of neurotransmitter homeostasis and synaptic plasticityassociated genes.
Conclusions: Overall our results suggest that ER stress-associated attenuation of NSC selfrenewal, increased apoptosis, and dysregulated neurotransmitter homeostasis and synaptic plasticity plausibly affect hippocampal neurogenesis and causation of ADRD

Nurturing the environment: Enhancing PET-plastic degradation by a slow-growing miracle microbe

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Background: Plastic pollution is a global problem of enormous (5.5 billion tons) and growing proportion (1). A promising solution involves fermentation of plastic waste to produce microbial biomass that can be used in a range of applications including compost production. However, few microbial species able to consume plastic waste have been identified, and those that have been, including the recently discovered gram-negative bacterial species Ideonella sakaiensis (I. sakaiensis) which consumes polyethylene terephthalate (PET) (2) – a common throwaway plastic – do so exceedingly slowly (2). Here we report results from a screen of 190 carbon sources to identify small molecule metabolic boosters of amorphous PET degradation by I. sakaiensis.
Methods: Two different Biolog carbon utilization tests (PM1 and PM2A; each a 96-well microplate containing a single control well and 95 different chemicals in the remaining wells) were used to assay for bacterial growth in the presence of 190 different carbon sources and both with and without a small disk of amorphous PET. Microplates were inoculated with I. sakaiensis at a known concentration and bacterial growth was measured by absorbance readings of 600 nm light over time or at a single time-point after 3-4 days of incubation at 30°C with shaking (~300 rpm). Metabolic activity was assessed after 4-5 days by introducing a redox indicator (Biolog redox dye G) to each micro-culture after 3-4 days and measuring the resultant 'color depth' after approximately 20 hours.

Results and Conclusions:
We identified and have begun further experimenting with a small set of carbon sources (GABA, Gentiobiose, D-Mannitol, mInositol, and also 3-25% rich medium (growth medium #802) in YSV minimal medium) that synergistically affect I. sakaiensis growth OR I. sakaiensis growth and metabolism in the presence of amorphous PET plastic. Pair-wise combinations of these carbon sources will be tested for greater effects on I. sakaiensis growth and metabolism. Conditions yielding maximum growth and metabolic synergies will be assayed at a larger scale (3-10 ml cultures) for enhanced degradation of APET plastic.
References:
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Rational Design of an Antimicrobial Peptide
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Background*: Clostridioides difficile* is a gram-positive, spore-forming anaerobic bacterium that is the leading cause of nosocomial infections. Due to its detergent-resistant spores and antibiotic resistance, *C. difficile* infection is an urgent threat since it is difficult to eliminate, allowing it to persist in healthcare institutions. Inadequate treatments available for this infection lead to the problem that *C. difficile* infection rates may rise in coming years due to an increase in hospital-acquired infections following the COVID-19 pandemic, and therefore the discovery of new antimicrobial compounds is of utmost importance. Antimicrobial peptides (AMPs) have become a promising alternative due to their unique mechanism, resulting in less antimicrobial resistance. Protein synthesis is a metabolic process that is a validated target for antibiotics. Initiation factor 1 (IF1) is a key component of protein synthesis and plays a key role in forming the pre-initiation complex with the 30S ribosome. The solution structure of Cd-IF1 has been determined and it consists of 5 β strands and 1 α helix forming a β-barrel arranged in a β1-β2-β3-α1-β4-β5 topology.
Methods: Protein expression and purification of 15N-labeled Cd-IF1 were isolated using Fast Protein Liquid Chromatography (FPLC). NMR Titration studies of Cd-IF1 and the 30S ribosomal subunit were carried out at 298 K on a Bruker Ultrashield Plus 600 NMR spectrometer. Minimum Inhibitory Concentration (MIC) Assays were conducted for antimicrobial susceptibility testing. Cytotoxicity assays were conducted using Human Embryonic Kidney-293 (HEK-293) cells to determine the toxicity of the Cd-IF1 AMP.
Results: The MIC for *C. difficile* was 0.13 mg/ml (66 µM) and for gram-positive species, the range of MIC was between 0.14 mg/ml and 0.37 mg/ml. The range MIC values for gram-negative species were between 1.0 – 1.5 mg/ml. The cytotoxicity assay determined that Cd-IF1 AMP showed no toxicity against HEK-293 cells.
Conclusion: NMR titration studies of the 30S ribosomal subunit and Cd-IF1 reveal key interactions between the α -helical strand and the 30S ribosome. A peptide was derived from the α helical strand and tested against *C. difficile* and various bacteria for antimicrobial abilities. From these studies, the *C. difficile* antimicrobial peptide (AMP) displayed broad-spectrum inhibition against a wide range of bacteria but not HEK-293 cells and may be a candidate for antibiotic development.

Targeted Treatment for KRAS12D For PDAC Treatment
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Introduction: Cellular stress is known to function in synergistic cooperation with oncogenic mutations during tumorigenesis to drive cancer progression. Oncogenic RAS is a strong inducer of a variety of pro-tumorigenic cellular stresses, and also enhances the ability of cells to tolerate these stresses through multiple mechanisms that leads to resistance to chemotherapy and to therapies that target the RAS pathway. Pancreatic Ductal Adenocarcinoma (PDAC) patients exhibit extremely poor prognosis. KRAS mutation on codon-12 is present in 70–95% of PDAC cases and it drives stress-adaptive mechanisms, PDAC growth and progression. Galectin-1 (Gal-1) is present in both PDAC and stromal cells, being involved in tumor microenvironment, immune cell activation and metastasis. Therefore, this study discusses the efficiency of combined inhibition of mutated $KRAS^{G12D}$ and Gal-1 inhibition to effectively suppress PDAC growth and progression. For this we have delivered $KRAS^{G12D}$ inhibiting siRNA ($siKRAS^{G12D}$) using a superparamagnetic iron oxide nanoparticle (SPION) and a galectin inhibitor.

Methods: SPION nano-formulation was used to deliver siKRAS^{G12D} and investigate in conjunction with Gal-1 inhibitor for its anticancer efficacy. Particles were investigated for size, physico-chemical characterization (Dynamic light scattering), hemocompatibility (hemolysis assay) and the complexation of siKRAS (gel retardation assay). Cellular internalization and uptake of the particles were investigated. Anti-cancer efficacy was determined using *in vitro* functional assays for cell viability (MTT), migration (Boyden chambers), invasion (Matrigel), clonogenicity, tumor spheroid formation, and in a *KrasG12D;LSL-Trp53R172H* syngeneic mouse model.
Results: Our results demonstrate that SP-siKRAS efficiently internalized in PDAC cells and suppressed KRAS^{G12D} as well as its downstream targets, YAP and PDL-1. Combined targeting of siKRAS and Gal-1 inhibited cell proliferation, clonogenicity, migration, and invasion of PDAC cells and tumor spheroid growth in 3D cell models, which recapitulate the heterogeneity and pathophysiology of PDAC. We have used -*KrasG12D;LSL-Trp53R172H* syngeneic mouse model of PDAC for investigating efficacy of combined SP-siKRAS formulation and galectin-1 inhibitor. Our results showed that the combination treatment inhibited the fibrotic tumor growth and increased survival rate. The combined treatment increased infiltration of total T cell population and CD8+T cells, reduced the population of myeloid-derived suppressor cells (MDSCs) by 50% (CD45+, CD3-, CD11b+, Ly6C high, Ly6G-) and T-Regulatory cells (Treg) by 57% (FoxP3+CD25+CD45+CD3+) and increased memory T cells by 34% in mice.
Conclusion: This gene therapy targeting KRAS G12D mutation with a Gal-1 inhibition has a potential to modulate the oncogenic network, stress-adaptive mechanisms and tumor microenvironment resulting in the repression of growth, metastasis, chemoresistance, and improvement in patient survival. This study will develop a novel sustainable therapeutic approach to target PDAC growth and improve patient survivability.

Targeting β-catenin signaling pathway for cervical cancer therapy

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Abstract: Aberrant activation of β-catenin signaling is strongly associated with cancer proliferation, invasion, migration, and metastasis, thus small molecules that can inhibit this pathway might have great clinical significance. Our molecular modeling studies suggest that Ormeloxifene (ORM), a triphenylethylene molecule docks with β-catenin, and its brominated analogue (Br-ORM) bind more effectively with relatively less energy (-7.6 kcal/mol) to the active site of β-catenin as compared to parent ORM. Herein, we report the synthesis and characterization of a Br-ORM by NMR and FTIR, as well as its anti-cancer potential in cervical cancer models *in vitro* and *in vivo*. Br-ORM treatment effectively inhibited tumorigenic features (cell proliferation and colony forming ability, etc.) and induced apoptotic death as evident by pronounced PARP-cleavage and arrest of cells in G1-S phase of cell cycle. Further, mechanistic investigations revealed that Br-ORM targets the key proteins involved in promoting epithelial mesenchymal transition (EMT) as demonstrated by upregulation of E-cadherin expression and repression of N-cadherin, Vimentin, Snail, MMP-2, -9 expression. Br-ORM also represses the expression and nuclear subcellular localization of β-catenin. Consequently, Br-ORM treatment effectively inhibited tumor growth in orthotopic cervical cancer xenograft mouse model along with EMT associated changes as compared to vehicle control treated mice. Altogether, *our in vitro* and pre-clinical *in vivo* findings suggest that Br-ORM is a novel, promising β-catenin inhibitor, therefore can be harnessed as a potent anti-cancer small molecule for the treatment of aberrant wnt/β-catenin signaling induced cancers, including cervical cancer.
Keywords: Cervical cancer, β-catenin, EMT; Epithelial to Mesenchymal Transition, Bromo-ormeloxifene

POST-DOC/FELLOW CATEGORY

Studying the molecular mechanism of hepatocellular carcinoma

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Background: Hepatocellular carcinoma (HCC) has a poor prognosis due to ineffective therapeutic modality and lack of early diagnostic marker. Accumulating studies have shown that elevated expression of mucin 13 as potential oncogene and predictive biomarker for various cancer. However, very little is known about its expression and function for development and progression of HCC.
Objective: To investigate mucin 13 expression in chemically induced hepatocellular carcinoma model.
Methodology: Diethyl nitrosamine (DEN) and 2-Acetylaminofluorene (2-AAF) induced method was employed for the development of hepatocellular carcinoma in Male Wistar rats. Serum and tissues were collected at regular intervals of time and routinely validated for liver cancer stages. Immunohistochemistry and *in situ* hybridization were performed on formalin-fixed, paraffin-embedded tissues. Molecular docking studies were performed to study the interaction of mucin 13 and DEN.
Results: Our results demonstrate hepatocellular adenoma as observed by histopathological analysis. Biochemical analysis showed a progressive increase in the levels of serum ALT, AST, and ALP, suggesting the development and progression of hepatocellular damage. Notably, mucin 13 expression gradually elevated during consecutive stages of hepatocellular carcinoma. Interestingly, an increase in nuclear localization of mucin 13 was observed in the treated group as compared to control group. *In situ* hybridization analysis showed that a decrease in miR-132 and miR-145, which are inversely related with mucin 13 expression. Moreover, DEN efficiently binds mucin 13 with high affinity and thus stabilize it as demonstrated by molecular docking analysis.
Conclusion: These results suggest that mucin 13 expression is closely associated with hepatocarcinogenesis and could serve as a predictive candidate biomarker for HCC.

MEDICAL RESIDENT CATEGORY

Endophthalmitis in an Elderly Patient - A Case of Delayed Transfer and Successful Management

Vamsikalyan Borra, Subhash Roy Kondapavuluru, Sreejith Pillali, Sabhi Gull, Andres Suarez Parraga

Introduction: Endophthalmitis is a severe and potentially sight-threatening condition that demands immediate attention and intervention. It is characterized by inflammation and infection within the eye, typically caused by bacterial or fungal organisms entering the eye, often following surgery or trauma. Usually present with sudden, severe eye pain, redness, decreased vision, and photophobia. As endophthalmitis can rapidly progress and cause irreversible damage to the eye, it is considered a true ocular emergency.

Case presentation: An 80-year-old woman, known to have Insulin-dependent Type 2 Diabetes mellitus and a history of breast cancer, arrived at the Emergency Department (ED) with persistent and worsening pain in her right eye for three days. She also experienced purulent discharge, sensitivity to light (photophobia), and swelling of the right eyelid, eventually preventing her from opening her eye. The patient denied fever, chills, trauma, or recent use of contact lenses. On examination, she exhibited conjunctival swelling (chemosis), painful eye movement (ophthalmoplegia), pus around the eyelashes, and a clouded cornea, which had worsened since admission. Initially, the patient had blurred vision that progressed to a sensation of flashing lights in her right eye. To address the suspected diagnosis of endophthalmitis, the patient started on Cefipime, Levaquin, and moxifloxacin eye drops. Plans were made to transfer her to another facility for intra-vitreal antibiotic administration. However, due to the unavailability of on-call ophthalmologists in the local area, the patient and her husband decided to drive to the Emergency Department of the University of San Antonio, seeking expedited access to Ophthalmology services. The risks, including potential permanent vision loss due to delayed care, were explained to them before their decision. Consequently, the patient was discharged and transferred to San Antonio for further management. During a follow-up call three days later, the patient's husband confirmed that she received intra-vitreal antibiotics. The patient reported being able to perceive hand movements in her right eye, indicating an improvement in vision. However, a surgical evaluation was still pending to assess the need for additional interventions and minimize the risk of complications.

Discussion: Transferring endophthalmitis patients to the Ophthalmology surgeon center(OSC) is paramount in preventing vision loss. The dedicated Ophthalmology surgeon center(OSC) has the resources, expertise, and advanced diagnostic tests to manage endophthalmitis accurately. Prompt treatment with intravitreal antibiotics and vitrectomy, if needed, can halt the progression of infection and minimize damage. Timely and specialized care prevents permanent vision loss

Managing Diffuse Alveolar Hemorrhage in a Critical Care Setting

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Background: Diffuse alveolar hemorrhage (DAH) is defined as disruption of the alveolar-capillary basement membrane, causing bleeding into the alveolar spaces. It is one of the rarest complications in systemic lupus erythematosus (SLE) and life-threatening conditions. Symptoms include shortness of breath, cough, fluctuating fever, and rarely hemoptysis. Complications include acute respiratory distress syndrome. The test of choice for diagnosis is bronchoalveolar lavage (BAL). The hallmark is that BAL aliquots are progressively more hemorrhagic. CT-chest shows ground glass or consolidative opacities that are usually diffuse and bilateral nonspecific. There is no cornerstone therapy for DAH due to SLE. Considering this a fatal condition, patients receive supportive care and high doses of systemic glucocorticoids accompanied by another immunosuppressive agent. We report a case of DAH with severe acute respiratory distress syndrome due to SLE with a prompt diagnosis and management.

Case presentation: A 26-year-old female with a history of Systemic Lupus Erythematosus and lupus nephritis presented to ED after an episode of hemoptysis. She also complained of associated dyspnea and fever. Initial chest CT revealed extensive bilateral, right lung predominant parenchymal and surrounding ground-glass opacities. Due to worsening acute hypoxemic respiratory failure, she required orotracheal intubation and mechanical ventilation. Bronchoscopy with bronchoalveolar lavage was performed demonstrating scant thin bloody secretions with predominant neutrophils. Nebulized tranexamic acid, high-dose intravenous methylprednisolone, and antibiotics were initiated. The patient was successfully extubated and transitioned to a nasal cannula. Repeat chest x-rays showed improvement in bilateral pulmonary infiltrates; no further episodes of hemoptysis were reported. Oral prednisone and hydroxychloroquine were initiated, and the patient was able to tolerate breathing room air with no signs of acute distress.

Discussion: Alveolar hemorrhage is a rare and potentially life-threatening complication seen in patients with Lupus. It's prompt recognition and early intervention are crucial to prevent further lung damage and improve outcomes. The exact etiology is not clearly understood though it is thought that is the result of specific SLE autoantibodies causing damage in the small pulmonary vasculature. BAL is the preferred diagnostic method, evidencing progressive hemorrhagic fluid. A lung biopsy is rarely necessary. The optimal treatment has not been yet well established. Because of the high mortality risk, patients are treated initially with high-dose intravenous steroids plus a second immunosuppressive drug. There is a delicate balance in starting a second agent because of possible underlying infection that can worsen the patient’s status. This decision should be based on the disease severity. Survival outcomes range between 28-75% survival rate reported in small case series though, further studies are needed to better understand the pathophysiology of DAH improving treatment and survival outcomes.

Triterpenoid CDDO-EA Protects from Obesity and Insulin Resistance in an Animal Model of Type 2 Diabetes

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Background: Type 2 diabetes (T2D) is characterized by insulin resistance, an impaired response to insulin by cells. Although several medications target insulin sensitivity, they fail to prevent progression to T2D in most high-risk individuals. Oleanolic acid (OA) is a pentacyclic triterpenoid found in plants with unique cardioprotective and anti-diabetic properties. OA can serve as a scaffold to produce synthetic molecules, known as synthetic oleanane triterpenoids (SOs), with enhanced biological activity. Our published findings show that the SO CDDO-EA (2-cyano-3,12- dioxooleana-1,9(11)-dien-28-oic acid-ethyl amide) facilitates translocation of the glucose transporter protein, GLUT4, as a new mechanism of CDDO-EA in regulating glucose metabolism. Thus, we hypothesize that CDDO-EA prevents glucose intolerance to protect from the development of T2D.
Methods: CDDO-EA was synthesized in powder form from OA via CDDO-methyl ester. The final product, CDDO-EA, was analyzed by high performance liquid chromatography (HPLC) and atmospheric pressure ionization/mass spectrometry (APCI-MS) to determine the purity and confirm the exact molecular formula. C57BL/6J mice (6 – 8 weeks old, male) were fed a low- fat diet (LFD, 10% of total calories from fat) or a high-fat diet (HFD, 60% of total calories from fat) with or without CDDO-EA (diet containing 0.04% CDDO-EA) for six weeks. Mice were unrestrained and awake throughout the collection of blood samples, oral glucose tolerance tests (OGTTs), and measurements of body weight. Blood samples were collected via tail snip before the start of experimental feeding and then every two weeks. Glucose levels were measured using a glucometer, and insulin concentrations were measured using an ELISA. Mice were weighed once a week. OGTTs were performed after the six-week experimental feeding.
Results: HPLC showed high purity (>99%) and APCI-MS showed the correct mass and fragmentation pattern of the synthesized CDDO-EA. Mice fed a HFD weighed significantly more than the LFD fed animals by week two, and this was consistent throughout the six-week study. The incorporation of CDDO-EA in the HFD prevented excess weight gain in mice fed a HFD. Further, CDDO-EA decreased energy intake in mice fed a HFD. Serum glucose levels were significantly increased in mice fed only a HFD at 2 weeks and remained significantly increased throughout the rest of the feeding. Serum glucose levels in mice fed a HFD with CDDO-EA did not increase throughout the six-week feeding. In addition, serum insulin levels were significantly higher at 2 weeks and remained significantly higher in mice fed only a HFD compared to mice fed a HFD with CDDO-EA. OGTTs showed that CDDO-EA prevented increased serum glucose and insulin concentrations in mice fed a HFD. The HFD + CDDO-EA group's glucose levels overlap with the HFD up to the 45 min. timepoint and then significantly decrease to glucose levels before experimental feeding. The HFD+CDDO-EA group insulin levels did not increase significantly and did overlap with the insulin levels before experimental feeding.
Conclusions: CDDO-EA prevents obesity due to decreased food intake and protects from hyperglycemia, hyperinsulinemia, and glucose intolerance. Our findings show for the first time that CDDO-EA has the potential to prevent insulin resistance and T2D.

MEDICAL STUDENT CATEGORY

Perceived Outcomes of Periacetabular Osteotomy (PAO): a Social Media Analysis

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Background: Social media is a popular resource for patients seeking medical information and sharing experiences. PAO is the gold standard treatment for symptomatic acetabular dysplasia with good long-term outcomes. However, little is known regarding the perceived outcomes of PAO on social media. Therefore, we aim to describe the perceived outcomes following PAO using three social media platforms: Facebook, Instagram, and Twitter.
Methods: Facebook, Instagram, and Twitter posts were retrospectively collected from 02/01/2023. Facebook posts were collected from the two most populated interest groups; "periacetabular osteotomy" and "PAO Australia." Instagram posts and Tweets were queried using the most popular hashtags; #PAOwarrior, #periacetabularosteotomy, #periacetabularosteotomyrecovery, #PAOsurgery, and #PAOrecovery. Posts were assessed for; demographic data (sex, race, location), perspective (patient, physician, professional organization, industry), timing (preoperative vs. postoperative), and perceived outcome (positive, negative, neutral).
Results: A total of 1054 Facebook posts, 1003 Instagram posts, and 501 tweets were consecutively assessed from 887 unique authors. The majority (63.3%) of these posts and tweets were from patients in the postoperative period, with an average of 321 days postoperatively (median 84 days, IQR 20-275 days). The longest follow-up timeframe postoperatively was 20 years. Regarding perceived outcomes, 52.8% expressed satisfaction, 39.7% held neutral opinions, and 7.5% were dissatisfied. Most dissatisfied patients (50.9%) reported pain (chronic or uncontrolled acute) as an attributing factor.
Conclusion: Most PAO perceived surgical outcomes on social media had a positive tone. The findings also indicate a small percentage of patients reported negative perceived outcomes. However, dissatisfaction with PAO primarily stemmed from post-operative pain. Social media posts from other sources (physicians, hospitals, professional organizations, etc.) trend towards neutrality. Healthcare providers must consider the social media narratives of patients following PAO as they may reveal additional outcome expectations and help improve patient-centered care, create informed decision-making, and optimize treatment outcomes. ; *1The University at Texas Rio Grande Valley School of Medicine, Edinburg, TX, USA 2University of Texas Southwestern Medical Center, Dallas, TX, USA3Baylor Scott and White Hip Preservation Center, McKinney, TX, USA*

Results from an Association-Scan of the Extended MHC-class-II Region Using Novel Association-Based Statistical Methods Establish that DQ Allotypes Influence the Risk of FVIII Inhibitor Development in Hemophilia-A Patients

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Background: Hemophilia-A (HA) is caused by factor VIII (FVIII)-gene (F8) mutations, variably deficient plasma FVIII activity (FVIII:C), and reduced to absent intrinsic-pathway amplification of coagulation. Infused therapeutic-FVIII-proteins (tFVIIIs) prevent bleeding in all HA patients (HAPs) but about 25-30% with severe-HA and 5-10% with non-severe-HA become refractory with the development of neutralizing-tFVIII-antibodies ("FVIII-inhibitors (FEIs)"). We use Immunochip genotyping in the PATH Study to screen the MHC-class-II (MHCII)-region for classical- and non-classical-HLA-class-II (HLAII)-genes and -pseudogenes for association with FEI-risk while accounting for the non-independence of data due to genetic relatedness and *F8* mutational heterogeneity using novel statistical methods. Our results establish that HLAII DQ-allotypes influence the risk of FEI development in HAPs.
Methods: The FEI-status of 438 North American HAPs—200 with black-African-ancestry and 238 with white-European-ancestry—was the dependent-variable of interest. The *F8*-mutation data and a genetic-relatedness matrix were incorporated into a binary-linear-mixed model of genetic-association with FEI-status (Yes vs. No), with 'Yes' designating those HAPs having FEIs of either any titer (i.e., >0.4 Bethesda Units (BUs) mL^{-1}) or only high-titer (i.e., ³5.0 BUs mL^{-1}). We used the ImmunoChip to conduct an MHCII-region-wide association screen of FEI-risk against the set of 926 distinct single-nucleotide-variations (SNVs) with high-quality genotypes that passed QC.
Results: Following the analytical procedure used in prior studies designed to identify determinants of FEI-risk, we performed the extended-MHCII-region-wide association screen on two groups of FEI-positive HAPs, those with any titer or those with only high-titer. HAPs in the high-titer FEI group are suspected to be more homogeneous with respect to the underlying immunobiology as they appear clinically to have induced full adaptive immunity. In contrast, HAPs in the any titer group are heterogenous as some will have transient FEIs that spontaneously disappear, and others will have FEIs that may remain low-titer despite continued FVIII-replacement-therapy. We found several SNPs that were not only significantly associated in both FEI groups—or significant and suggestive respectively in the high-titer and any titer groups—but also increased in significance (i.e., their p-values decreased) under the high-titer analysis (see Figure). The latter observation indicates that these significant results correspond to true associations that became more apparent as sources of "noise" were removed upon going from the any titer to high-titer analysis.

These included a SNP in the 3'-untranslated-region (UTR) of DQB1 (rs1049225, p-value=5.7E-7) and two intergenic HLAII region SNPs (rs2647012, p-value=1.1E-5; and rs2858324, p-value=1.1E-5). The DQB1 SNP reached an ImmunoChip-wide significance threshold in the high-titer analysis (i.e., a p-value < 5.9E-7) and extended-MHCII-region-wide significance in the any titer analysis (i.e., p-value < 5.4E-5). Although the two HLAII-intergenic SNPs were not ImmunoChip-wide significant, they were significant across the extended-MHCII-region (i.e., p-value < 5.4E-5). We found two SNPs that were significant and suggestive respectively in the high-titer and any titer FEI analyses (rs9276189, p-value=1.3E-5; and rs2856717, p-value=3.3E-5) as well as one SNP that was significant in the high-titer FEI analyses but not significant or suggestive in the any titer analysis (rs9271366, p-value=1.9E-6).
Conclusion
Our results establish that a novel DQB1 genetic variant is associated with FEIs.

Submental Intubation in Oral Maxillofacial Surgery: A Case Report and Review of Indications and Complications
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Introduction/ Background: Submental intubation is a valuable alternative airway management technique employed in oral maxillofacial surgery when intraoral or nasal intubation is contraindicated or poses a potential risk (Schütz, 2008). This case report presents a clinical scenario in which a patient underwent oral maxillofacial surgery necessitating submental intubation. Additionally, we review the indications, technique, and potential complications associated with this specialized intubation approach. Oral maxillofacial surgeries frequently involve complex fractures, extensive soft tissue injuries, or anatomical variations that preclude traditional intraoral or nasal intubation. Submental intubation provides a safe and effective option in such cases, avoiding the need for tracheostomy or alternative invasive procedures (Caron, 2000). During submental intubation, a modified oral endotracheal tube is passed through an incision made in the submental region, and then threaded into the oropharynx, allowing for secure airway access while preserving the integrity of the oral cavity and nasal passages. This technique offers several advantages, including improved surgical field visualization, reduced risk of oral trauma, better postoperative pain management, and enhanced patient comfort during the recovery phase (Valsa, 2012). However, submental intubation is not without potential complications. These include surgical site infection, subcutaneous emphysema, hematoma formation, damage to the sublingual and lingual arteries, recurrent laryngeal nerve palsy, and difficulty with tube manipulation. Familiarity with the anatomical landmarks and meticulous technique is essential to minimize these risks and optimize patient outcomes (Das, 2012). This case report highlights a patient who underwent oral maxillofacial surgery and required submental intubation due to complex facial fractures. By presenting this case and reviewing the literature, we aim to enhance understanding of the indications, technique, and potential complications associated with submental intubation in oral maxillofacial surgery.
Case Description: The patient is a 45-year-old female with a past medical history of diabetes mellitus (DM), hypertension (HTN), and hyperlipidemia (HLD), transferred to a level 1 trauma center following a motor vehicle collision (MVC). The patient, a restrained driver, collided with a school bus, resulting in her vehicle going underneath the bus. She arrived at the emergency department intubated and sedated, with a Glasgow Coma Scale (GCS) score of 3T, indicating severe neurological impairment. Upon physical examination, the patient presented with a deformity of the face, specifically a depressed nasal bridge. Trauma CT scans were performed, revealing multiple significant injuries. These included comminuted fractures of the nasal bones and a bony nasal septal fracture. Additionally, a left orbital blowout fracture, bilateral inguinal sinusitis, and fractures of the bilateral orbital and maxillary sinus walls were observed. The left inferior rectus muscle was entrapped in the left orbital blowout fracture, resulting in the presence of intraorbital air bubbles and subcutaneous emphysema. Furthermore, bilateral lung contusions were detected on the CT scan. Due to the severity of her life-threatening injuries, the patient was admitted to the Surgical Intensive Care Unit (SICU) for further surgical management. Interval surgery was performed, specifically addressing the left orbital floor and maxillary sinus fracture, which demonstrated decreased displacement and angulation compared to the initial assessment. The complexity of this surgery as well as the extent of her lesions prompted the Anesthesiology team to perform a submental intubation to properly secure the patient's airway. As a result of the treatment, the patient's respiratory status significantly improved, leading to the discontinuation of DuoNeb and positive expiratory pressure (PEP) therapy, which had been initiated to address acute hypoxemic respiratory failure and respiratory alkalosis associated with the bilateral pulmonary contusion.
Discussion: Submental intubation is an effective way to ensure the restoration of a functional airway in the setting of simple to complex OMF trauma fractures. This intubation method secures a patient's airway while providing uninterrupted access to the operative field. OMF trauma fractures may compromise adequate mask ventilation due to facial edema, facial asymmetry, nasal septum deviation, or oral occlusion by blood and secretions. Thus, in the setting of trauma, the airway must be secured using a method that is quick and allows for adequate ventilation. When compared to nasotracheal or orotracheal intubation, submental intubation is associated with minimal complications. Complications such as nasal bleeding, tracheal stenosis, neck vessel injuries, or skull base fractures are rarely seen in submental intubations (Agrawal, 2010). OMF trauma fractures may result in alteration of normal airway anatomy thus adding to the difficulty of inserting a nasotracheal tube despite the assistance of Fiberoptic bronchoscopy or Video laryngoscopy. The patient presented with nasal, orbital, and bilateral maxillary fractures making submental intubation the more effective method compared to nasotracheal intubation. Performing a tracheostomy would also be a viable alternative in this case, however this method is associated with increased complications, including: hemorrhage, pneumomediastinum, subcutaneous emphysema, pneumothorax, tracheal erosions, dysphagia, stoma infection, voice changes, and excessive scarring.

According to the International Journal of Oral and Maxillofacial Surgery, if maxillo-craniofacial surgery is indicated and less than 7 days are required for ventilatory support, a patient with jaw fractures, naso-orbital ethmoid fractures, or contraindications to nasotracheal intubation should be initially intubated through the submental route (Figure 1, Jundt et al. 2012). Previous studies have shown that the average time required for completion of submental intubations may range from 5.6-9 minutes (Valsa et al, 2012). According to Valsa et al, the average time it takes to disconnect the endotracheal tube from the ventilation circuit while performing a submental intubation is approximately 1.5±0.35 min. A shorter disconnection time from the ventilatory circuit, decreases the chances of hypoxic injury to the patient during intubation. The patient tolerated this method of intubation well as a secure airway was established and sufficient space for the operation was provided. After surgery, the patient was transferred to the ICU and discharged home a few days later.

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Treatment Strategies for Metabolic Associated Fatty Liver Disease (MAFLD) in Childhood: A Systematic Review

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Introduction. Obesity is associated with various metabolic conditions, but the impact differs between children and adults. Our previous research has demonstrated that children may exhibit reversibility in biochemical features, while experiencing less response in terms of anatomical damage. Metabolic Associated Fatty Liver Disease (MAFLD) is a condition that necessitates urgent treatment during childhood to mitigate future complications, such as worsening chronic inflammation and increased predisposition to diabetes, hypertension, or endothelial damage. In this study, we aim to evaluate the main clinical interventions (including drugs, behavioral treatments, nutrition programs, and traditional medicine) that effectively reduce MAFLD in children with obesity.
Methods. To conduct this study, we formed an international collaboration group comprising researchers from UTRGV and thirteen institutions in Mexico. The study was registered in Prospero (CRD42023393952). We conducted comprehensive searches in PubMed, Ovid MEDLINE, Cochrane Central Register of Controlled Trials (CENTRAL), and Web of Science, resulting in a total of 1106 registered papers (258=Cochrane, 448=OVID Medline and 400=Web of Science). We analyzed the eligibility criteria for randomized controlled trials (RCTs), assessed the quality of the papers using the Jadad scale, and extracted relevant data. The final analysis includes 28 studies categorized based on the type of intervention performed.
Results Three papers analyzed the effects of metformin and vitamin E (n=359), reporting changes in metabolic variables, with only one study finding improvement in liver condition through ultrasound assessment. Twenty-two papers examined the use of supplements (n=1,378) combined with lifestyle interventions or hypocaloric diets. The commonly studied supplements included vitamin E, probiotics, and polyunsaturated fats. Most of these studies demonstrated improvements in metabolic conditions and liver ultrasound findings. Additionally, four studies focused on lifestyle interventions (n=262), incorporating strategies such as physical activity, diet modifications, and psychological counseling. These interventions also resulted in improved metabolic conditions, and some studies reported changes in liver condition based on ultrasound assessments. Four studies investigated the effects of dietary interventions alone (n=202), three of which showed positive changes in metabolic variables and liver ultrasound findings. Furthermore, a year-long study involving physical activity (n=28) demonstrated improvements in metabolic variables.
Conclusion. This systematic review highlights the effectiveness of treatment strategies for children with MAFLD, as evidenced by improvements in biochemical variables and beneficial effects on liver anatomy. Our next step will involve conducting a meta-analysis to further analyze the data and provide comprehensive conclusions.

POSTER PRESENTATIONS

FACULTY CATEGORY

Allelic frequency of *DPYD* genetic variants: implementation of a genotyping test in Mexican population

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Background: Fluoropyrimidine-based (FP) chemotherapy is extensively used to treat solid cancers, including colorectal and breast cancer. A dihydropyrimidine dehydrogenase (DPD) enzyme deficiency, encoded by the dihydropyrimidine dehydrogenase (*DPYD)* gene, increases the risk of severe toxicity. FP toxicity affects about 30-40% of patients, which in some cases may be lethal. FPs have been used for over 50 years, and an estimated 2 million cancer patients are treated with FP drugs annually. In particular, FPs remain among the most effective drugs for treating GI malignancies, including colorectal cancer (CRC) (1.8 million), gastric (1 million), and pancreatic cancer (n=460,000). In Mexican oncology practice, FP and capecitabine chemotherapies are the most common drugs for gastrointestinal, head and neck, and breast tumors. *DPYD* genotyping aims to identify variants that lead to DPD deficiency. We implemented a seven-allelic genotyping test and analyzed the frequency in the Mexican population.
Methods: We included seven *DPYD* variants: c.1129-5923C->G, c.2846A->T associated with increased risk toxicity (reduced activity), and c.1156G->T, c.1905+1G->A, c.1679T->G, c.1898delC, and c.299_302delTCAT associated with high risk for FP toxicity (no activity or significantly reduced activity). Genomic DNA was isolated from 280 subjects: 36 cancer patients and 244 non-cancer subjects. We analyzed *DPYD* variants by real-time PCR (c.1156G->T, c.2846A->T, and c.1129-5923C->G) and Sanger sequencing (c.1905+1G->A, c.1679T->G, c.1898delC and c.299_302delTCAT) The allele frequency was calculated for each variant.
Results: For Sanger sequencing, primers were designed to amplify four variants. Amplified products of the expected size were obtained. Three variants were amplified using TaqMan probes and synthetic positive controls for both alleles. We found the c.1129-5923C>G variant in the heterozygous state in 1% (n= 3), and the c.2846A>T variant was found in 0.33% (n=1) of the participants. We did not found the rest of the variants in the Mexican population.
Conclusions: The allele frequency for two of the seven analyzed variants (c.1129-5923C->G and the c.2846A>T) was higher than reported for the global population (0.00476, and 0.005166). DPYD genotyping may help identify patients at higher risk of developing severe FP toxicity. Personalized medicine allows oncologists to modify the treatment before it begins.

Assessing Community Health Workers perceptions of their participation in COVID-19 related projects implemented throughout South Texas and their alignment to the Dimensions of Community Capacity

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Background: During the COVID-19 pandemic, Community Health Workers (CHWs) have been vital in helping to mitigate health disparities as they have helped serve as a bridge for communities and needed resources. In addition, they have been vital in improving health as they help build community capacity through their outreach, community education, and advocacy. Thus, the purpose of this project was to assess CHW's perceptions of their participation in COVID-19 related projects implemented by the South Texas AHEC Program, throughout South Texas, and their alignment to Goodman et al.'s Dimensions of Community Capacity.
Methods: Using qualitative description, five individual semi-structured interviews were conducted with CHWs in either English or Spanish based on the participant's preference. The questions in the interview guide were created based on the Dimensions of Community Capacity and then qualitative content analysis was used to analyze the data. Data were then categorized based on their alignment with the Dimensions of Community Capacity.
Results: In this project, CHW's perceptions aligned well to the following Dimensions of Community Capacity: 1) Social and Interorganizational Networks, 2) Community Values, 3) Community History, 4) Community Power, 5) Leadership, 6) Resources, and 7) Sense of Community.
Conclusions: These findings highlight the importance of capturing CHWs perceptions when working with CHWs on public health projects. Moreover, their perceptions of the COVID-19 projects implemented across South Texas provide examples of how their work aligned with seven dimensions that are essential to community capacity building.

Chronic Cannabis Use is Associated with Decreased Treatment Response in Major Depression.

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Background: Cannabis is the most frequently used federally illegal drug among the population and those receiving psychiatric treatment, including patients with major depression or alcohol use disorder. There is limited information on the impact of chronic cannabis use on treatment response. The aim of this study was to examine the rate of depression remission among patients with MDD and comorbid alcoholism who reported chronic cannabis abuse.
Methods: Sixty-four subjects with comorbid major depressive disorder and alcohol dependence (PRISM/DSM-IV), and a chronic (=>10 years) history of cannabis use (n=26) were compared to those who reported occasional or no cannabis use (n=38) on remission (defined as a score of 7 or below on the Hamilton Rating Scales of Depression (HRSD)) from major depression. Subject completed a 24-week randomized, placebo-controlled, double-blind study receiving fluoxetine (dose range 20-60mg/day) and either naltrexone hydrochloride (dose 50 mg/day) or placebo to decrease alcohol use. Subjects were longitudinally assessed 12 times over a 24-week period. We used mixed model analyses to examine whether chronic cannabis abuse predicted MDD remission and clinicians' rating of very much improved on the Clinical Global Improvement Scale.
Results: The chronic cannabis use group (n=26) had significantly lower proportion of patients remitted (very much improved on the CGI with a mean HRSD of 5.7 (SD 2.7)) compared to the occasional or no use group (n=38) (5.8% vs. 14.7% respectively, p=0.002) and they had very low likelihood of remission (Odds Ratio= 0.358 (p =0.0018)). The two groups were similar on age, ethnicity, and marital status. There were more males in the chronic use group (65.4% vs. 39.5%, p=0.04). The two groups were similar on baseline alcohol dependency scale score, functioning (GAF mean score), anxiety (HARS mean score), and hours of sleep (PSQI mean score), but differed on baseline depression (HRSD-25 mean score 19.6 (sd 4.4) vs. 22.4 (sd 5.9) respectively, P=0.045), psychiatric severity index (ASI mean score 0.56 (sd. 0.15) vs. 0.48 (SD 0.09) respectively, p=0.014)), and on lifetime years of cannabis abuse (mean years 20.35 (SD 6.7) vs. 0.92 (SD 1.67) respectively, p=<0.001). The chronic cannabis abuse group also reported higher proportion of drug use days during the study (mean weakly days 0.9 (SD 1.8) vs. 0.05 (0.2) respectively, p=0.025). The two groups did not significantly differ on average weekly alcohol drink (10.83 (SD 16.31) vs.16.48 (19.19) respectively) or on average dose of fluoxetine (mean dose 31.69 (SD 14.63) vs. 30.10 (SD 14.15) respectively).
Conclusions: The results indicate that only about one-third of those with chronic cannabis use are as likely to remit as compared to occasional or non-users, despite receiving similar dose of fluoxetine. While this is a secondary analysis in a relatively small sample of patients with MDD and alcohol dependence, to our knowledge, this is the first rigorously controlled study focusing on the potential impact of chronic cannabis use on treatment remission of major depression. Future studies are warranted to further elucidate the role of cannabis use as a predictor of treatment response and remission of major depressive disorder

Dissecting The Influence of Perceived Discrimination and Genetic Liability on Mental Health

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Background: Underrepresented groups are disproportionally affected by discrimination, which can have long-lasting influences on the individual's wellbeing and mental health. This study leverages the diversity of the *All of Us* cohort to investigate the interplay between genetic risk factors and perceived discrimination in the context of mental health disorders. This study aims to shed light into the underlying biological and environmental risk factors, and its interplay, of mental health disorders in underrepresented populations.
Methods: Data on perceived discrimination was retreived from the the All of Us (AoU) COVID-19 Participant Experience (COPE) questionnaire and matched with sociodemographic and phenotypic data. Perceived discrimination was considered as a binary variable (has the individual experienced discrimination in the past or not) thus including various types/sources of discrimination (e.g., racial, age, gender, economic status, etc.). Two major mood disorders: anxiety and depression were considered, phenotypes for these disorders were defined for each individual based on prescription medication use. ANOVA, CHI2, and regression models were implemented using python to further delve into the underlying risk factors in the population of study. Linear regression models were also constructed using a calculated discrimination score.
Results: Preliminary results showed a total of 69,464 AoU participants who answered the discrimination questions within the COPE survey at any point. First survey responses for those participants were selected to be used for the data analysis. Medication use (anxiolytics and antidepressants) was assessed through participants medical records where 21,618 participants were prescribed one or more medications of the above two categories. The everyday discrimination score was constructed by summing the responses across all of the nine questions/ items assessing exposure, scores were then transformed to a mean item score by dividing the sum by number of completed items. Dose dependent associations reveal the impact of discrimination frequency on the individual's wellbeing and mental health.
Conclusion: The study uncovers a different perspective about the biological and environmental risk factors of mental health disorders in underrepresented populations. Mobilization of more resources to address the mental health burden in underrepresented populations is warranted.

Enhancing the Tribological Performance of Prosthetic Implants: An Investigation of CNC Surface Micro-Texturing on UHMWPE

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Background: Annually, there are over a million joint replacement procedures and more than 250,000 revision surgeries in the United States. The typical lifespan of a joint replacement ranges from 7 to 15 years, often curtailed by complications such as excessive implant wear leading to infections and joint dislocations. Given that most joint replacement recipients are between the ages of 50 and 70, the later part of their lives is often marred by repeated surgeries and discomfort. Presently, the predominant material used in joint replacements is medical-grade Ultra-High Molecular Weight Polyethylene (UHMWPE) with smooth surfaces. While these smooth surfaces are believed to minimize wear rate, studies have indicated that introducing micro-textures to these polyethylene components can further decrease wear, thereby enhancing the replacement's lifespan. This project aims to evaluate and optimize the use of a CNC machine to create surface micro-textures on UHMWPE discs. The study explores the impact of varying micro-drill bit sizes and spindle speeds on the micro-texturing process's precision, efficiency, and consistency. By understanding these influences, the project seeks to improve the production process for prosthetic components, ensuring high quality and uniform textures that could enhance the durability and performance of such implants. In a future study, the tribological performance of different pattern microtextured UHMWPE discs will be evaluated by means of a Pin-on-Disk tribometer.
Methods: In the current project, discs with 1.125 inches in diameter and 0.25 inches in thickness were cut from a 12x12x0.25-inch UHMWPE sheet. A CNC 3-Axis machine was used to create the microtextures on the UHMWPE discs. Three different surface micro-textures (dimple, cross hatch, and canal patterns) were selected for the experiment. These patterns are expected to generate different hydrodynamic responses under lubricated wear tests. The parameters of the microtextures, such as dimple diameters, depth, and separation, were varied for the experiment. These terms refer to the size, depth, and the distance between the small depressions created on the surface of the UHMWPE discs. To create the different micro-textures, two different sizes of microdrill bit diameters were used: 0.02” and 0.01”. The spindle speeds were set at 100 and 200 rpm. The diameters of the dimples and the distances between them were measured using a digital microscope.
Results: The experimental results showed that the micro-texturing process exhibited superior precision in creating the intended patterns on the UHMWPE discs. The diameters and depths of the microtextures were consistent across all samples, as confirmed by measurements taken with the digital microscope. The dimple diameters and depths variance were less than 2% from the intended values, indicating high repeatability and consistency in the preparation process. A micro-drill bit size of 0.02” and a spindle speed of 200 rpm created the most desirable texture profiles for all three patterns.

Leveraging secondary data to study Alzheimer’s disease risk factors in minority populations

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Background: Alzheimer’s Disease is the leading cause of dementia in the aging population, and minority groups like Latinos have 3 to 5 times more risk to develop dementias than the overall US population. Several studies have examined for possible causes of this increased risk, but lack of comprehensive information plus a reduced number of minority samples available in those studies have hindered the answers.
Methods: We examined South Texas Medicare/Medicaid data as well as the National Alzheimer’s Coordinating Center dataset, looking for comorbidities and risk factors related to neurodegeneration in different minority groups. Correlation and regression analyses were used to assess their possible interactions in the studied populations.
Results: Medicare statistics depict the prevalence of dementias in Texas as 12.6%, however, Rio Grande Valleycounties have higher rates: Cameron: 15.1%, Hidalgo: 20.2%; Starr: 26.4%. High blood pressure is highly correlated with dementias (R=0.5), also high in TX (59.9% prevalence), and even higher in the RGV: Cameron: 65.6%; Hidalgo: 67.6%; Starr: 74.8%; and Diabetes (R=0.5) is highly prevalent in the RGV: Cameron: 65.6%; Hidalgo: 67.6%; Starr: 74.8%. Other minority groups exhibit very different risk rates, which need to be examined thoroughly using genetic-cultural-environmental interactions.
Conclusions: The Rio Grande Valley is incubating a public health crisis in its aging population. High prevalence of hypertension, diabetes, and obesity means that we should expect higher rates of Alzheimer and other dementias in our population when currently affected young adults get older. These disorders have genetic factors with high effect sizes, therefore genetic studies can help to delineate adequate preventive strategies in minority populations. Public health interventions should start with children in schools, by
teaching healthy eating habits and providing healthy meals in permanent campaigns

Prevalence of alternative treatments in patients in the oncology area in northeastern Mexico.

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Background: The treatment against cancer depends of the type of cancer and the stadiumthat is found, the treatment consist in the application of one or various methods, according to the American Institute for Cancer Research, the principals methods used are the following: surgery, radiotherapy, chemotherapy, immunotherapy, driven therapy, hormonal therapy, mother cells transplant, biomarker test, etc. Mexico has more than 4500 medicinal plants, and only 11% of those plants had chemical, pharmacological and biomedical efficacy. For the above, in the country stands out the use of herbalist treatment for different types of cancer, however, the published articles in this topic are scarce. The present abstract becomes important since there is no study of this type in the northern region of Mexico.
Methods: This study is observational, cross-sectional, descriptive and prolective. A non-probabilistic sampling was carried out. The study included 100 patients who attended the oncology area of the Hospital de Alta Especialidad de Ciudad Victoria "Bicentenario 2010" during the study period and who met the selection criteria indicated for this research.
Results: 100 surveys were carried out on cancer patients, of which 55% were female. This population has an average age of 48.2 years. Regarding the origin of the patients, 67% reside in Ciudad Victoria. The range of educational level among the interviewees oscillated between high school and middle school, who belong to the middle class. There is a prevalence of 82% in the use of alternative treatments to treat the pathology, of which 76% employ the use of herbal medicine as an adjuvant in the different diseases that are treated in the hospital. The main plants used are: 45% Cannabis sativa, 23% Morinda citrifolia and 12% Arctium lappa.
Conclusions: The use of complementary alternative medicine is common in cancer patients, highlighting herbal medicine. Due to the above, understanding the dynamics of the implementations of alternative therapies such as herbalism will allow understanding and guiding the patient in their oncological cycle process and minimizing side effects

Sacral Pain "Recurrence" Not Exactly The Teenage Dream

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BACKGROUND: This case is a great example of remembering the basics. We teach our medical students, residents and fellows the importance of getting a thorough history and exam. However, this case is a reminder to apply those lessons in the real world.
CASE PRESENTATION: 15 yo Female came in complaining of sacral pain. 2 years prior she had a fall causing a coccyx fracture which resolved with conservative treatment. She didn't have any issues since then until 3 weeks prior to today when she began to have pain in the same area. She denied any new inciting events such as trauma or falls. She saw pediatrician for annual wellness exam 2 weeks prior who ordered imaging showing mildly displaced fracture of the anterior distal coccyx and normal soft tissue appearance and was given ortho referral. Mom says ortho didn't say much with no follow up plans. The pain increased over the next week almost causing her to go to ER. She then saw a Chiropractor who recommend against manipulation given the x-ray findings. Reported to have normal pain free bowel movements. Pain is aggravated with sitting. She denied any radiation of pain, numbness, tingling, urinary changes, fevers, chills or night sweats. Last menstrual period was 3 weeks prior and normal.
DIFFERENTIAL DIAGNOSIS:
1. Coccyx Fracture
2. Disc herniation
3. Spondylolysis

PHYSICAL EXAMINATION:
T: 98.3F
BP: 129/74
Pain: 8/10
Pulse: 109bpm
General: Moderate distress
Respiratory: No respiratory distress
Musculoskeletal:
Back -
ROM: Full forward flexion, side bends, twisting, extension.
Special Maneuvers: Negative slump test bilaterally. Straight leg raise deferred due to pain.
Bilateral Lower ExtremitiesStrength: Hip flexion, knee flexion, knee extension, ankle dorsiflexion, ankle plantar flexion all 5/5.
DTR intact knee and ankle 2+
Inspection: T-spine/L-spine no gross abnormalities, erythema, rashes, bruising or lacerations.
Sacrum noted large erythematous cyst/abscess at the superior intergluteal natal cleft with no visible openings or superficial sinus or drainage noted.
Palpation: T-spine/L-spine non-tender. Superior intergluteal natal cleft with roughly 3cm area of fluctuance tenderness to palpation.
TREATMENT:
In office incision and drainage performed at intergluteal natal cleft abscess using local anesthesia. Moderate amount of foul-smelling purulence was drained and washed out. Oral antibiotics prescribedCT scan ordered General surgery referral provided
TEST RESULTS:
Wound culture – Negative
CT pelvis w/wo contrast – abscess measuring 2.8 x 1.8 x 3.6cm, some moderate proliferative enhancement.
FINAL DIAGNOSIS:
Pilonidal Abscess
OUTCOMES:
Excellent learning case highlighting the extreme importance of a thorough physical exam. Mom mentioned nobody had previously looked at the area of complaint meaning that the patient was seen by 3 providers who failed to perform a basic exam. Patient had to unnecessarily endure over 3 weeks of pain. Left untreated, this could have progressed to sepsis and hospitalization. Patient later saw general surgery but decided against further intervention due to financial reasons. However, she did well overall.

SAR Study of Niclosamide Derivatives for Neuroprotective Function in SH-SY5Y Neuroblastoma

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Background: Neurodegenerative disease is a debilitating and incurable condition that affects millions of people around the world. The loss of functions or malfunctions of neural cells causes mortality. A proteasome inhibitor, MG132, is well known to cause neurodegeneration in vitro when model neuronal-derived cell lines are exposed to it. Niclosamide, an anthelmintic drug, which has been used for more than 50 years, has recently attracted renewed attention in drug repurposing because it has been found as a good candidate against various diseases in screenings. We recently found that all markers of MG132-induced neuronal cell toxicity, including the accumulation of ubiquitinated proteins, were prevented by niclosamide. In addition, niclosamide was shown to enhance autophagy induced by MG132. Therefore, our results suggest that niclosamide could be a potential neuroprotective agent. In the present study, niclosamide derivatives were synthesized by changing substituents, and their structure-activity relationship (SAR) of the protein ubiquitination induced by MG132 and cell survival signaling pathways for neuroprotective function were studied.
Methods: The 12 niclosamide derivatives were synthesized; mostly, they were prepared from the corresponding benzoic acid and aniline derivatives in the presence of PCl_3 in dry xylene under reflux conditions. Niclosamide and the 12 derivatives were dissolved in DMSO. The SH-SY5Y cells were cultured at 5% CO_2 at 37 °C in EMEM: Ham's F-12K medium (1:1), 5% horse serum with penicillin (100 units/mL), and streptomycin (100 µg/mL). The cells were sub-cultured weekly in 60 mm or 100 mm cell culture dishes and used for experiments at 85-90% confluence of the cell monolayer. SH-SY5Y cells were treated with niclosamide or derivatives and 5 µM MG132 for 24 h. The cell lysates were prepared for Western blot assays using anti-ubiquitin antibodies, including ubiquitin, PARP, p-JNK, CHOP, cyclin D, and p53.

POST DOC/ FELLOW CATEGORY

Development of cross-linked tannic acid-based nanoparticle for lung cancer treatment

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Background: Lung cancer is a predominant cause of cancer-related morbidity and mortality across the world including in the United States. Treatment modalities for lung cancer include surgery, chemotherapy, radiotherapy, and/or targeted therapies depending on the cancer stage. Despite the survival benefits of chemotherapy, its value is offset by severe systemic side effects such as renal and/or hepatic toxicity or insufficient amounts of drug reaching to the target site. Such pitfalls can be handled by inhalable therapy which avoids first-pass metabolism and increases patients' compliance. In this study, we have investigated the inhalable therapy of cross-linked tannic acid-based nanoparticles (CTA NPs) into cancer cells and determined the synergistic effect of gambogic acid (GA) and gemcitabine (Gem).
Methods: The CTA NPs formulations were characterized for particle size, chemical composition, and drug loading efficiency using various physicochemical methods (FT-IR, DSC, SEM, and TGA). Cellular uptake of CTA NPs was evaluated in lung cancer cell lines (A549 and NCI-H1299) using fluorescence microscopy and flow cytometry analysis. Further, the therapeutic efficacy of GA-Gem encapsulated CTA NPs (G-G CTA NPs) formulation was determined by various *in vitro* assays (CCK-8, mucoadhesion Boyden chamber, and apoptosis assays). The molecular effects of G-G CTA NPs formulation were also observed in lung cancer cell lines.
Results: Our novel CTA NPs formulation provided an average size of 110 nm in dynamic light scattering with a sustained release of the drug(s). CTA NPs formulation showed a remarkable mucoadhesion and mucopenetration penetration potential in-vitro model(s). Cellular uptake studies show that CTA NPs formulation allows for effective endosomal release into the cytosol. Additionally, the G-G CTA NPs formulation showed superior *in vitro* anti-cancer activity in lung cancer cells (A549 and NCI-H1299) compared to free drugs.
Conclusions: Taken together, our results demonstrate that G-G CTA NPs formulation exhibits superior anti-cancer potential than free drug against lung cancer and could be a novel therapeutic modality for the management of lung cancer.

In-silico approach for identifying metabolic proteins and their pathways involved in neurodegenerative disorders RNA-Seq data

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Abstract
Background: Neurodegeneration is a pathological condition where progressive loss of neuronal cells occurs in the brain. Neurodegenerative disorders have become more prevalent and by 2050, it is predicted that they will be the primary cause of ageing worldwide. Globally, the prevalence of neurodegenerative disorders like Alzheimer's disease (AD) and Parkinson's disease (PD) has been increasing tremendously. It has been identified that various proteins, such as APP, Tau, -synuclein, and TAR DNA-binding protein 43, are some of the main causative factors of dementia in older patients. Several studies have supported the idea that in-silico analyses using high-throughput RNA-seq data are the most efficient way to comprehend differentially expressed genes, cross-talk, and molecular pathways, which can aid in the early detection of brain cell depletion.
Methods: In-silico approach for high-throughput RNA-seq, STAR tool was used for alignment of fastq files accessed from ENA data archive, to study the differentially expressed genes (DEG). DESeq2 package from Bioconductor was used for all the commonly expressed genes. Gene ontology and pathway analysis was done using Cytoscape to study the network and PPI (Protein-Protein Interactions).
Result: According to data for AD and PD, nearly 49% of the genes are found to be expressed in both neurodegenerative disorders. The finding showed that by using Cytoscape, expressed genes for FDR > 0.05, and found ERCC1 and COX15 highly expressed genes.
Conclusions: The complex molecular foundations of these disorders are currently indescribable. In spite of diverse clinical and pathological expressions, common features have been recognized in both Neurodegenerative Disorders which provide indication of their convergence.
Keywords: Neurodegeneration, Differentially Expressed genes

Results: Our results indicate that when phenol OH was present, the compounds demonstrated neuroprotective activity, while the presence or absence of Cl (5- or 2'-Cl) showed almost the same neuroprotective effect. 4'-NO2 can be replaced by N3 or CF3 to have neuroprotective activity, whereas NH2 significantly decreased activity. Yet, when there is no substituent at the 4'-position, there is no significant activity. All the bioassays showed that niclosamide and certain derivatives showed a neuroprotective function. While there is no evidence for the direct bindings of niclosamide and their derivatives to any specific proteins, the results indicate that the phenol OH plays an important role, and chloride at 2'-Cl or 5-Cl, does not affect the neuroprotective activity. 4'-NO2 can be replaced with N3 or CF3. However, 4'-NH2 and 4'-H significantly decreased the neuroprotective function. This suggested the substituent at 4' position plays some role in bindings. The inhibition of p53 expression by these compounds may have a different mechanism of action, and further investigation will be required in the future.
Conclusions: Based on the results of the present study, niclosamide, and its derivatives can be new target molecules for the prevention of Parkinson's disease (PD) and other neurodegenerative diseases. Also, these findings provide valuable information for the development of the next generation of niclosamide analogs

Therapeutic efficacy of novel brominated-ormeloxifene (Br-ORM) against cervical cancer

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Abstract
Aberrant activation of β-catenin signaling is strongly associated with cancer proliferation, invasion, migration, and metastasis, thus small molecules that can inhibit this pathway might have great clinical significance. Our molecular modeling studies suggest that Ormeloxifene (ORM), a triphenylethylene molecule docks with β-catenin, and its brominated analogue (Br-ORM) bind more effectively with relatively less energy (-7.6 kcal/mol) to the active site of β-catenin as compared to parent ORM. Herein, we report the synthesis and characterization of a Br-ORM by NMR and FTIR, as well as its anti-cancer potential in cervical cancer models in vitro and in vivo. Br-ORM treatment effectively inhibited tumorigenic features (cell proliferation and colony forming ability, etc.) and induced apoptotic death as evident by pronounced PARP-cleavage and arrest of cells in G1-S phase of cell cycle. Further, mechanistic investigations revealed that Br-ORM targets the key proteins involved in promoting epithelial mesenchymal transition (EMT) as demonstrated by upregulation of E-cadherin expression and repression of N-cadherin, Vimentin, Snail, MMP-2, -9 expression. Br-ORM also represses the expression and nuclear subcellular localization of β-catenin. Consequently, Br-ORM treatment effectively inhibited tumor growth in orthotopic cervical cancer xenograft mouse model along with EMT associated changes as compared to vehicle control treated mice. Altogether, our in vitro and pre-clinical in vivo findings suggest that Br-ORM is a novel, promising β-catenin inhibitor, therefore can be harnessed as a potent anti-cancer small molecule for the treatment of aberrant wnt/β-catenin signaling induced cancers, including cervical cancer.
Keywords: Cervical cancer, β-catenin, EMT; Epithelial to Mesenchymal Transition, Bromo-ormeloxifene

Investigating the significance of MUC13 in hepatocellular carcinoma development

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Abstract
Background: Hepatocellular carcinoma (HCC) has a poor prognosis due to ineffective therapeutic modality and lack of early diagnostic marker. Accumulating studies have shown that elevated expression of mucin 13 as potential oncogene and predictive biomarker for various cancer. However, very little is known about its expression and function for development and progression of HCC
Objective: To investigate mucin 13 expression in chemically induced hepatocellular carcinoma model.
Methodology: Diethyl nitrosamine (DEN) and 2-Acetylaminofluorene (2-AAF) induced method was employed for the development of hepatocellular carcinoma in Male Wistar rats. Serum and tissues were collected at regular interval of time and routinely validated for liver cancer stages. Immunohistochemistry and *in situ* hybridization were performed on formalin-fixed, paraffin-embedded tissues. Molecular docking studies were performed to study the interaction of mucin 13 and DEN.

Results: Our results demonstrate hepatocellular adenoma as observed by histopathological analysis. Biochemical analysis showed a progressive increase in the levels of serum ALT, AST and ALP, suggesting the development and progression of hepatocellular damage. Notably, mucin 13 expression gradually elevated during consecutive stages of hepatocellular carcinoma. Interestingly, an increase in nuclear localization of mucin 13 was observed in treated group as compared to control group. *In situ* hybridization analysis showed that a decrease in miR-132 and miR-145, which are inversely related with mucin 13 expression. Moreover, DEN efficiently binds mucin 13 with high affinity and thus stabilize it as demonstrated by molecular docking analysis.
Conclusion: These results suggest that mucin 13 expression is closely associated with hepatocarcinogenesis and could serve as a predictive candidate biomarker for HCC.

One-step simultaneous liquid phase exfoliation-induced chirality in graphene and their chirality-mediated microRNA delivery

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Background: Graphene (G) has been established as an exciting prospect for a broad range of applications owing to its remarkable properties. As the molecular structure of G itself is achiral thus introducing chirality in G by simple attachment of a functional group (a chiral ligand) on the G nanosheet may result in more diverse applications. The recent innovations of G chiral nanosystems have been extended to drug delivery. Herein, we have developed a novel and facile synthesis method for producing chiral G for its application in the chirality-dependent microRNA delivery.
Methods: L-graphene and D-graphene were produced in a single step by using chiral L-tyrosine and D-tyrosine as a stabilizing and chiral-inducing agent and applying high-temperature sonication. The chirality of the exfoliated L-graphene and D-graphene was assessed with circular dichroism (CD) spectroscopy and their structural, morphological, and surface evaluations were studied using Raman spectroscopy, transmission electron microscopy (TEM), and X-ray photoelectron spectroscopy (XPS), respectively. In addition, an attempt has been made to explore the cell viability, hemocompatibility, cellular uptake, and internalization pathway, chirality-mediated interaction, and microRNA (hsa-miR-205-5p) transfection with C4-2B prostate cancer cells.
Results: The CD spectra confirmed the chirality present in the exfoliated L(D)-Graphene. Moreover, the Raman spectrum and TEM data confirmed the formation of multi-layer graphene with asymmetric morphology and a large aspect ratio. L-graphene and D-graphene show cellular compatibility. Chiral preferential binding occurring between miR-205 and D-graphene makes them an exciting prospect for gene delivery. D-graphene exhibits superior hemocompatibility compared to commercially available transfection reagent (Lipofectamine). Cellular uptake is clearly shown by internalization of D-graphene into C4-2B prostate cancer cells. miR-205 efficient delivery utilizing D-graphene was confirmed by transfection efficiency and MTT assay.
Conclusions: Our results demonstrated that a direct approach- one-step liquid phase exfoliation-induced chirality in graphene and their selective chirality-mediated microRNA delivery.

Using Molecular Docking, Dynamics, and Simulation to Investigate the Role of *Trigonella foenum-graecum* Interaction with Parkin gene in the Prevention of Oral Cancer

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Background:
Oral cancer is one of the most feared diseases in the world, as well as India's second leading cause of death. Several studies have found that the upregulation and downregulation of various tumour suppressor genes, such as Parkin gene, are linked to cancer pathogenesis. So, numerous therapeutic options are available to combat this disease; however, due to their drawbacks and side effects, it is necessary to find alternatives, such as medicinal plants. As a result of their low toxicity and immense nutraceutical value, plants and their extracts have proven critical in treating and managing a variety of cancers, including oral cancer. Fenugreek (*Trigonella foenum-graecum*), considered to be one of the earliest effective medicinal plants and commonly used spices in Indian cooking. This plant has numerous valuable properties against a variety of diseases such as arthritis, bronchitis, wounds, abscesses, digestive disorders, and cancer.
Methods: Using molecular docking, dynamic and simulation approaches with Parkin gene in oral cancer, we investigated the possibility of understanding the mechanism underlying the anti-cancerous activity of the bioactive compound of fenugreek seeds.
Results: The findings investigated the interaction of the bioactive compound trigoneoside IB in fenugreek seeds with Parkin gene, resulting in higher molecular dock scores (-8.6 Kcal/mol), stable molecular dynamics (MD) simulation results, and lower binding energy calculations.
Conclusion: The computational results show that the fenugreek seed compound trigoneoside IB could be an effective drug candidate for treating oral cancer. As a result, additional research is required to validate and prove these findings by in vivo studies.
Keywords: Oral cancer, Parkin gene, *Trigonella foenum-graecum*

MEDICAL RESIDENT CATEGORY

A Case of Recently Diagnosed Uncontrolled Hyperthyroidism Associated with Bilateral Pulmonary Embolism

Gomez Casanovas J, Bartl M, Pedraza L, Fleires A, Suarez A

Background: Pulmonary embolism (PE) is a relatively common acute cardiovascular disorder with considerable mortality, despite advances in diagnosis and treatment. In 25 to 50% of first-time cases, no readily identifiable risk factor can be found. Several studies have suggested hyperthyroidism to be a potential hypercoagulable and hypofibrinolytic state. In this case, we present a patient with uncontrolled hyperthyroidism with incidental bilateral PE.
Case Presentation: A 47-year-old Hispanic lady with past medical history of recently diagnosed hyperthyroidism who was not compliant with medical therapy, presented to the emergency department with 4-hour history of chest pain. She described it as sudden onset, pressure-like pain that occurred during exertion and radiated to the back. She had associated palpitations, diarrhea, arthralgias and dyspnea that did not improved with rest. She also states having poor appetite and some weight loss for at least 1 year. The patient does mention having been diagnosed with hyperthyroidism one month ago by an endocrinologist in Mexico, who prescribed her propranolol and methimazole, which she was not taking as prescribed. Her vital signs were temperature of 98.1, heart rate of 124, respiratory rate of 18 and blood pressure of 112/84 mm Hg with a SpO2 of 99% on room air. Upon physical examination, she was alert, anxious and in mild distress. She was tachycardic, with no murmur or gallop and lungs were clear to auscultation. She did not have any skin lesions. Laboratory findings were remarkable for elevated D-dimer of 643, alkaline phosphatase of 228 with liver function tests within normal range and troponin I of 0.27. Thyroid function test revealed TSH of 0 uLU/mL, total T3 493 ng/dl, free T3 22.5 pg/ml, T3 uptake of 62.5 %, total T4 24.9 ug/dl and free T4 of 5.06 ng/dl. CT of the chest with contrast revealed subsegmental bilateral lower lobe pulmonary emboli. It also revealed a soft tissue prominence within the anterior mediastinum. Thyroid US revealed an enlarged thyroid gland with heterogeneous echotexture and hyperemic Doppler flow, compatible with active thyroiditis. Burch-Wartofsky score was 35 points. Patient was admitted for uncontrolled hyperthyroidism with impending thyroid storm as well as bilateral PE with possible right heart strain. She was started on Propranolol, Methimazole, potassium iodide and heparin drip. Patient status overall improved and Echocardiogram revealed EF 60-65% without signs of right heart strain. Thyroid workup then revealed TSI of 297, positive ANA with nuclear pattern and TPO of 151 IU/mL. She was later discharged with Eliquis, methimazole and propranolol for close follow up.
Conclusions: Hyperthyroidism has well known effects on the cardiovascular system, however, further data suggests that it modifies physiologic processes of hemostasis, leading to bleeding or thrombosis. This is due by upregulating adhesion molecules and endothelial marker proteins. Most studies have shown that hyperthyroidism is related to venous thromboembolism risk, however just a few have focused on specifically its association with PE. There are currently no recommendations in regard to prophylactic anticoagulation in hyperthyroid state, however physicians should be alert for possible thrombotic events with these patients.

A Rare Case of Acute Pancreatitis Associated with Cannabinoids Consumption

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Introduction: Acute pancreatitis is an inflammatory condition of the pancreas characterized by abdominal pain and elevated levels of pancreatic enzymes in the blood. Acute pancreatitis is a leading gastrointestinal cause of hospitalization in the United States. Several conditions are associated with acute pancreatitis, of which gallstones and chronic alcohol use disorder account for approximately two-thirds of the cases. Others, including smoking, hypertriglyceridemia, infections, trauma, drugs, malignancy, scorpion stings, hypercalcemia, endoscopic retrogradecholangiopancreatography (ERCP), opioids, angiotensin-converting enzyme (ACE) inhibitors, macrolides, diuretics, statins, and cannabis have also been associated with acute pancreatitis.
Cannabis is the most widely used recreational drug worldwide, with over 4% of the world's population using it annually.
Case Presentation: A 21-year-old female with no medical history presented to the ER due to acute epigastric abdominal pain. The patient states that she began experiencing acute epigastric abdominal pain, waking her up in the morning. She describes the pain as constant in duration, sharp/stabbing in character and 8/10 in intensity. Her abdominal pain was associated with nausea but no vomiting. She has a history of appendectomy and denies the use of any medication or over the-counter supplements. She has consumed Marijuana daily for the past few months but denies any other illicit drug use. She states that she drinks alcohol in minimal amounts. She denies fever, chills, diarrhea, constipation, sick person contacts, or recent travel. On physical exam, she was in severe pain but alert and oriented. Vital Signs showed temp. 36.4C, pulse 60 bpm, BP 100/64, O2 sat. 99%. The abdominal exam was significant for epigastric tenderness but no guarding or rebound tenderness and normal bowel sounds. Laboratory work showed normal complete blood count (CBC), and basic metabolic panel (BMP), negative troponin level, lipase was elevated at 596 U/L (N 15-53 U/L), triglyceride level was 55 mg/dL (N 50-150mg/dL), and serum calcium level was 8.8mg/dL (N 8.7-10.4mg/dL). The urine drug screen was positive for Cannabinoids. Initial ultrasound of the abdomen showed a normal gallbladder. CT of the abdomen and pelvis with contrast showed no acute abnormality within the pancreas. Diagnosis of acute pancreatitis was made. Still, the etiology of the patient's pancreatitis was not apparent. The patient was treated with a bowel rest and IV fluid with morphine for pain. The pain improved after a couple of days, and she could tolerate a regular diet. She had no complications during her hospitalization and was discharged the following day.

Conclusion: Cannabis is an unusual cause of acute pancreatitis. There is a paucity of information about how cannabinoids interact with receptors in the pancreas to cause acute pancreatitis. Few cases of cannabis-induced acute pancreatitis have been reported since the legalization of cannabis consumption. Physicians and health care providers must be aware of such complications associated with cannabinoid consumption and warrant further large-scale studies for possible pathophysiology and outcomes.
Keywords: acute pancreatitis, cannabis, cannabinoids, tetrahydrocannabinol, THC

Ampullary Carcinoma in a Veteran with Exposure to Agent Orange
Authors: Cho, Eunbee & Patel, Shreel & Kondapavuluru, Subash

Introduction: Agent Orange(2,3,7,8-Tetrachlorodibenzo-p-dioxin), also referred to as “dioxin”, is a herbicide, extensively used during the Vietnam War. It is proven to be associated with various types of cancers, including chronic B-cell leukemias, Monoclonal gammopathy of undetermined significance(MGUS), Non-Hodgkin’s and Hodgkin’s lymphoma, as well as diseases such as diabetes mellitus type II and Parkinson’s disease. Primary ampullary carcinoma is a rare cancer of the gastrointestinal tract, with an incidence of 4 to 10 cases per million population. They can occur sporadically or in the setting of a hereditary syndrome. The etiology of sporadic ampullary tumors remains uncertain. Here, we present a case of ampullary carcinoma in a Vietnam War veteran with documented Agent Orange exposure. This report questions the possible relationship between Agent Orange exposure and ampullary carcinoma and the need for comprehensive evaluation and management of veterans exposed to hazardous substances during their military service.
Case: A 73-year-old male Vietnam War veteran with a history of Agent Orange exposure during military service, presented with obstructive jaundice. His medical history included diabetes mellitus type II, a known complication of Agent Orange exposure. Endoscopic retrograde cholangiopancreatography(ERCP) revealed the presence of a tumor in the ampulla of Vater, causing biliary obstruction. Biopsy obtained during ERCP revealed adenocarcinoma, positive for CK 19, CK7, p53, S100 P, p16, and negative for CK20, SMA D4. The immunophenotype was suggestive of pancreaticobiliary primary. He underwent a Whipple resection with final pathology revealing an adenocarcinoma, pancreaticobiliary type, moderately differentiated, limited to the ampulla of Vater measuring 2.0X1.0 cm in size, grade 2, all margins uninvolved, and 2 out of 15 regional lymph nodes involved. Given the aggressive nature of the disease, surgery was followed by adjuvant chemotherapy with gemcitabine and capecitabine for six cycles, followed by chemoradiotherapy. Afterward, regular follow-up visits with imaging studies and tumor marker monitoring were scheduled to detect recurrence or metastasis.
Discussion: This case highlights the possible association between Agent Orange exposure and the development of ampullary carcinoma. Agent Orange is a potent carcinogenic chemical classified as a group 1 human carcinogen by the International Agency for Research on Cancer(IARC). The dioxins in Agent Orange are highly lipophilic, and when exposed, they build up in the adipose tissue and are stored in the body for decades. It acts as a carcinogen by disrupting normal cellular signaling pathways and promoting malignant transformation. The patient’s exposure to Agent Orange during military service and the following medical complication: diabetes mellitus type II, as well as the development of ampullary carcinoma decades after exposure, suggest the possibility of Agent Orange as a causative role in the development of ampullary carcinoma. There has been continuous research on dioxin exposure and its association with increased risk of gastrointestinal malignancies such as colorectal cancer. However, further investigation is required to understand and establish the association between Agent Orange and ampullary cancer. This will result in optimal patient care with adequate screening and treatment for veterans with an Agent Orange exposure History.

Anaphylaxis after Avocado ingestion in a patient located in the Rio Grande Valley
Eric Sanchez, MD, Andreina Baird Borja, MD, David London, MD, Daniela Hernandez, MD, Jose Gomez, MD.

Background: The avocado is an integral part of the Tex-Mex cuisine, especially in the Rio Grande Valley. Cases of severe anaphylactic reaction related to avocado mostly occur with previous history of latex-sensitization, also known as "latex-fruit syndrome," rather than caused by avocado alone. One of the major identified avocado allergens is the protein Prs a 1, a chitinase that helps the plant for protection and has cross-reaction with natural rubber latex allergens. According to the most recent national survey done in 2014, the prevalence of anaphylaxis in the United States ranged from 1.6% to 5.1%. Food reactions accounted as the second most common cause of anaphylactic reactions, being peanuts, cow's milk, and Hen's egg the most frequently implicated substances.
Case Presentation: A 71-year-old female with history of hypertension, obesity and urticaria! episodes induced by avocado presented to the emergency via ambulance with an erythematous rash, acute shortness of breath, facial and tongue swelling after eating substantial amounts of avocado. Symptoms began 10 minutes before arrival and had progressively worsened with severe alertness reduction. Emergency medical services (EMS) administered intramuscular epinephrine, oral diphenhydramine, inhaled albuterol, and bag-valve-mask ventilation while she was in-route without therapeutic response. Upon arrival to the emergency-room, she was found unresponsive, with a diffuse erythematous rash, facial and tongue edema, rapid sequence intubation was performed for airway protection. A diagnosis of acute respiratory failure secondary to avocado induced anaphylaxis was made, and she was directly admitted to the intensive care unit (ICU) on mechanical ventilation She received fluid resuscitation with 1 liter of normal saline, repeated intramuscular epinephrine, diphenhydramine, famotidine, and Methylprednisolone in the ED (Emergency Department). In the ICU, the patient continued mechanical ventilation and sedated with multiple unsuccessful extubating attempts due to absence of cuff leak and important facial and tongue edema. On the second day of her ICU stay, a latex lgE was requested due to her persistent angioedema and history of allergy to avocado, patient was also empirically placed on latex allergy precautions.

The next day, an improvement of the angioedema was noted, patient passed all steps of extubating trial, including presence of cuff leak, was successfully extubated, and placed on Nasal cannula at 4 Liters per minute. On her 4th day of hospital stay, the patient was downgraded to the telemetry floor as her oxygen requirements continued decreasing and her angioedema improving. The patient was discharged the next day with a short course of prednisone and as needed inhaled albuterol. Her latex lgE levels were available after discharge, with a result of 0.71 kU/L, which was compatible with moderate levels of allergy to latex. Records were sent to her primary care physician.
Conclusion: This case reveals the importance of doing a thorough allergy and immunologic investigation in patients with plant-triggered anaphylactic reactions. Especially, when they are unable to provide information and failure for a rapid resolution of symptoms are not noted despite adequate treatment. It also enhances making timely decisions in patients with uncommon presentations.

Assessing influence of immigrant status and other social determinants of health on community psychiatry
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UTRGV School of Medicine
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Abstract
Background/purpose: Social determinants of health are fundamental and structural factors that affect people's lives and impact their health and longevity. Differences in social determinants of health across populations and communities account for major health disparities between them. The purpose of this paper is to assess how social determinants of health have impacted the health outcomes in patients from our community psychiatry clinics, to evaluate the impact of irregular immigration status as an independent social determinant of health, and to investigate the use of SDOH screening instrument in our clinics.
Methods: An online questionnaire was sent to community psychiatry providers in different clinical sites (RGSC, UTRGV clinics, VBMC, TTBH) . The questions involved in the survey provided included 10 key pillars of social determinants of health such as: 1. Discrimination, racism and social exclusion 2. Adverse life experiences 3. Job insecurity and unemployment 4. Income inequality 5. Poverty 6. Neighborhood deprivation 7. Food insecurity 8. Housing instability 9. Poor access to mental health care. 10. Immigration status and evaluation of the impact towards certain patient populations. The results were tabulated and interpreted as flow charts. Additionally, we provided a case report from our clinic in which SDOH impacted negatively diagnosis and management of a patient exhibiting rare neurodegenerative disorder, HD.
Results: The majority of clinicians that participated in this study reported that economical status, housing situations, transportation barriers, lower educational level independently contributed to poor health outcomes. Between 40-50% of participants reported that irregular immigration status negatively impacted patient's diagnosis and management. More than 70% of participants have used any form of SDOH screening in their practice, yet 90% of participants reported their lack of awareness about financial/assistance resources to be detrimental for patient's health outcomes.
Conclusions: Our study corroborated and reiterated that social determinants of health significantly affect physical and mental health outcomes of our unique patient population. Most of the community clinicians indicated non-standardized usage of SDOH screening tool though they reported unawareness surrounding appropriate measures and resources available to address these social factors. Therefore, there is a need to implement the use of a standard, simple and comprehensive SDOH screening tool in community psychiatry clinical sites. Future directions may involve conduction of an experimental study, in which psychiatric patients' outcome on mental health will be analyzed with implementation of standardized SDOH screening tool and establishment of structured referral pathway.

Asymptomatic Spontaneous Pneumopericardium in a Young Post-COVID-19 Patient: A Case Report
Gomez Casanovas J, Baird A, Sanchez E, Fleires A, Hernandez D

Background: Pneumopericardium is a rare clinical condition which is defined as the presence of air or gas in the pericardial cavity. Although uncommon to see, it can present after chest trauma, barotrauma, fistula between the pericardium and surrounding structures, gas-producing microorganisms and iatrogenic causes. But spontaneous presentations are even more uncommon. Coronavirus Disease 2019 (COVID19) infection became a large global epidemic and in addition to respiratory symptoms, involvement of other organs such as pericardium was also reported. We here present a young patient post-COVID-19
infection with isolated spontaneous pneumopericardium.
Case Presentation: A 19-year-old patient with a past medical history of ADD and general anxiety disorder presented to the emergency department with worsening abdominal pain of 4-day duration, that started after having lunch at a family gathering. The pain progressed to colicky pain with no radiation and was associated with dysuria. Of note, 2 weeks prior the patient had a COVID-19 infection associated with a non-productive cough, for which she received supportive treatment. She denied any shortness of
breath, chest pain, paresthesia's or paresis, recent trauma, any cannulations, and recent diving. No history of illicit drug use. Vitals were unremarkable. Physical examination showed suprapubic tenderness. Urinalysis included presence of moderate leukocyte esterase, WBC 10-25 and 5-10 RBC. The Urine pregnancy test was negative. Due to the abdominal pain and concern for appendicitis, CT (Computed Tomography) scan of the abdomen and pelvis with contrast was ordered and did not reveal any acute intra-abdominal or pelvic process, but there was an incidental finding of air presence in the pericardial space. An immediate CT of the chest without contrast was ordered and it did not reveal any pneumopericardium or pneumomediastinum. Pelvic US was performed later to evaluate for potential causes; and was unremarkable. Patient was admitted under observation for management
of UTI (Urinary Tract Infection). She remained stable without any shortness of breath or chest pain and her abdominal pain improved in the first 24 hours. She was later discharged with oral antibiotics for UTI.

Conclusion: Pneumopericardium is a rare but potentially life-threatening condition. The most common clinical presentation is with chest pain, dyspnea and/or hemodynamic instability if large enough to produce tamponade physiology. In this case, the patient had a recent COVID-19 infection with cough. COVID-19 infection is associated with alveolar rupture and hyperinflammatory response, which could increase the risk of pneumopericardium, but the exact mechanism has not been elucidated. Since most of the patients with COVID-19 have a mild clinical presentation, the incidence of pneumopericardium is difficult to evaluate and the symptoms easily be obscured by the constellation of symptoms these patients present. In this patient, the repeat CT of the chest was unable to find the presence of air, which was consistent with improvement of the patient´s abdominal pain. This could have been because of migration of air or reabsorption, which correlates to the self-limiting nature of this disease.

Comatose Deception, Benzodiazepine masquerade of Myxedema Coma

Roy Kondapavuluru, Sabhi Gull, Hemaswini Kakarla, Reshmanth Prathipati, Dr.Andres Suarez

Introduction: Myxedema coma is a life-threatening condition due to severe hypothyroidism or long-standing untreated hypothyroidism. This condition can be triggered by factors such as infection, exposure to certain medications, or other stressors on the body. Symptoms of myxedema coma include hypothermia, altered mental status, and fluid accumulation. This condition can be life threatening and requires immediate medical attention. Benzodiazepines are often prescribed to address various conditions such as anxiety, sedation, and seizures. However, they have significant side effects including drowsiness, sedation, low blood pressure, and slow heart rate. These side effects can mimic symptoms of other conditions such as myxedema coma. In this case we describe a patient who initially appeared to have overdosed on benzodiazepines but was later diagnosed with myxedema coma.
Case Presentation: A 49-year-old lady presented to the emergency department in an obtunded state and decreased respiratory drive. Earlier that day, she accidentally ingested a fish burger despite having a fish allergy, and experienced wheezing, facial swelling, and vomiting. She self-administered an epinephrine pen to manage the allergic symptoms. She was found unconscious by her daughter, who promptly called emergency medical services (EMS). Although no signs of an allergic reaction observed, EMS noted bradycardia and a reduced respiratory drive and administered naloxone and flumazenil which mildly improved her symptoms. The patient's medical history included post-traumatic stress disorder, generalized anxiety disorder, bipolar type one, fibromyalgia, and hypothyroidism with inconsistent medication (levothyroxine) adherence. Her medication regimen included clonazepam (2mg twice daily), trazodone (100mg twice daily), tizanidine (4mg twice daily), fluoxetine (20mg daily), and temazepam (50mg twice daily). She was not taking levothyroxine at that time daily. Her daughter reported a progressive decline in strength, fatigue, weight gain, hoarse voice, dyspnea on exertion, and cold intolerance over the recent months.
During assessment, vital signs indicated a temperature of 97 degrees Fahrenheit, bradycardia (56), respiratory rate (10), blood pressure 93/38, oxygen saturation of 85% on room air, and body mass index of 55. Physical examination revealed obesity, acute distress, constricted pupils (2-3), a short supple neck, audible inspiratory stridor, tenderness in the left upper quadrant of the abdomen, and 2+ pitting edema in bilateral lower extremities.
Laboratory findings revealed hypercarbia (31.7 mmol/L), reduced glomerular filtration rate (39.4 ml/min/1.73 mm2), elevated thyroid-stimulating hormone (179 uIU/ml), and low free thyroxine (0.1 ng/dl) levels. With a Popoveniuc score of 80, she met the diagnostic criteria for myxedema coma and was promptly started on levothyroxine.
Conclusion: Initial diagnosis of benzodiazepine overdose was questioned due to consistent use, confirmed by pharmacy refill dates, and most importantly lack of typical symptoms of overdose and response to treatment. Later it was proved that noncompliance with levothyroxine led to myxedema coma triggered by benzodiazepines which worsened her condition. This case emphasizes the need for vigilance in distinguishing between benzodiazepine side effects and other conditions. Timely recognition and appropriate treatment, such as levothyroxine initiation, are crucial in managing myxedema coma and preventing life-threatening complications.

“Blood Blood everywhere” A case report of Buried Bumper Syndrome presenting as melena and hematochezia from gastric ulcers.

Roy Kondapavuluru, MD; Jian Garcia, MD; Baron S. Ekeledo, MD; Balu Ravella MD and Julio Perez Rodriguez, MD

Abstract- Gastrostomy tubes are frequently placed for a variety of conditions that cause interference with oral intake or gastric decompression and are used for enteral feeding, hydration, and medication administration in patients who are likely to have prolonged inadequate oral intake. As with any procedure, gastrostomy tubes are associated with complications which can be classified as minor (e.g., infection, bleeding, leakage, perforation, or pneumoperitoneum) and major (e.g., deterioration of the gastrostomy site, buried bumper syndrome, or fistulas). Buried Bumper Syndrome is a rare but major complication of gastrostomy tubes which results due to tight apposition of the external bumper against the abdominal wall and erosion of the internal bumper of the gastrostomy against the gastric wall. As per latest reports it is seen in about 0.3 to 2.6 % of patients with gastrostomy tubes occurring as a late complication. Symptoms may consist of pain, resistance or inability to infuse feeds, and leakage around the tube. We present a case of Buried Bumper Syndrome who presented with melena, hematochezia, and severe anemia.
Case Report- A 55-year-old lady who is a long-term nursing home resident presented to the emergency department in Southern Texas in late April of 2023 with altered mental status, shortness of breath with agonal breathing, melena, and hematochezia. She had a PEG (Percutaneous Endoscopic Gastrostomy) tube placed to help her obtain her nutritional requirements 5 months prior. She was intubated due to a low GCS and failure to protect her airways, found to be anemic from hypovolemic shock secondary to upper gastro-intestinal bleed requiring blood transfusions and Gastroenterology was consulted.

She underwent an Esophago-gastro-duodenoscopy which showed a malfunctioning gastrostomy tube with evidence of four superficial gastric ulcers. Non-bleeding gastric ulcers with erythematous hemorrhagic mucosa in the gastric body were seen with the largest lesion measuring 6 mm (about 0.24 in) in dimension. There was evidence of an eroding gastrostomy tube present in the gastric body. The PEG tube inner bumper was loosened to promote healing. Recommendations to use Pantoprazole 40 mg per PEG for two weeks, Metoclopramide 5mg IV, and restarting PEG feeds at slow rate were made to continue care. The PEG tube was eventually surgically Removed.
Discussion- Buried Bumper Syndrome is a rare but major long-term complication of gastrostomy tubes occurring in about 0.3 to 2.6 % of patients who have a gastrostomy tube in place. Daily care and periodically measuring the PEG to recognize early migration should be done to prevent this syndrome. Diagnosis can be made with imaging such as CT scan which may show migration of the tube, however EGD remains the ideal method to diagnose Buried Bumper Syndrome, which will show the internal bumper buried within the gastric wall. Treatment of this complication is specific to the PEG tube. They can be removed by simple external traction, cut with the push-pull technique, incising the gastric mucosa with a needle knife or papillotomy, or surgical removal.

Delayed management of PFO after Stroke presentation in a healthy Hispanic female
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Background: Strokes are a leading cause of long term disability. Around 800,000 people in the USA have a stroke every year. (CDC) 25% of the population have a Patent foramen ovale (PFO). Stroke in the presence of PFO has been described to be found in up to 40% of patients with “embolic stroke of undetermined source”, otherwise known as cryptogenic strokes. Despite the aforementioned prevalence, there is mixed data on PFO management options. Current management guidelines include dual anti-platelet therapy, anticoagulants, and percutaneous transcatheter closure. Some studies suggest that PFO might be an incidental finding in patients with cryptogenic stroke.
We present an adult female patient with no significant past medical or social history, with abrupt right sided neurological stroke-like symptoms.
Case presentation: 46 year-old female with no significant past medical history, was admitted 7 hours after new onset right facial and upper extremity numbness and weakness, including right facial gaze palsy. After excluding hemorrhagic stroke, dual anti-platelet therapy was initiated, as arrival time was out of window for rTPA . On the second day of admission, the patient had mild worsening of symptoms with 1 point increase in the NIH stroke scale (3) (1 - mild to moderate aphasia; 2 - severe dysarthria). MRI reported acute nonhemorragic CVA involving the posterior left side of pons. Cardiac echocardiography after administration of saline revealed right to left Inter atrial shunting, suggesting a small PFO.
Conclusion: The benefits of PFO surgical closure to prevent recurrence in young patients without significant medical history are still in debate. Clinicians should be aware of the association between PFO and recurrent ischemic stroke, especially in patients presenting with atypical stroke symptoms and young age. Most recent guidelines for the prevention of stroke recommend PFO closure in patients with Deep vein thrombosis and high risk recurrence (Recurrence Risk Estimator at 90 days -RRE-90). A few meta-analyses evaluate percutaneous transcatheter closure with better outcomes than medical therapy.
This case was managed with medical therapy, dual antiplatelet agents to reduce the risk of further thrombotic events. In addition, further investigation was recommended to assess the feasibility of percutaneous closure of the PFO to prevent future paradoxical emboli. Long-term follow-up with regular monitoring of blood pressure, lifestyle modifications, can be crucial in reducing the risk of recurrent ischemic strokes. Timely evaluation and consideration of potential underlying cardiac abnormalities can aid in formulating an appropriate management plan to prevent further cerebrovascular events in these patients. Further research is warranted to elucidate the optimal management strategies and long-term outcomes in patients with PFO-associated stroke recurrence.

Dual V2 and V3 Peripheral Pulsed Radiofrequency Ablation for Successful Trigeminal Neuralgia Treatment: A Case Report
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Introduction: Radiofrequency ablation is a common treatment for trigeminal neuralgia when medical treatment has failed, as it has been shown to be comparably effective to surgery with a better complication profile. The elderly population, who are at a high risk for surgery, is a good candidate for this treatment. Currently, semilunar ganglion radiofrequency ablation (GRF) is the widely used approach; however, recently, peripheral radiofrequency ablation (PRF) of the V2 and V3 branches has been reported with comparable results3.
Objectives: To report a case of trigeminal neuralgia that was successfully treated with dual V2 and V3 peripheral nerve ablation therapy.
Methods: Case study.
Results: One month postoperatively, the patient reported a VAS score of 0/10 for trigeminal neuralgia after V2 and V3 peripheral nerve ablation.

Case Description: A 70-year-old female presented with chronic right facial pain for 8 years, with a constant sharp pain VAS score of 8-10/10. Imaging studies revealed no pathological findings, and there were no known conditions for secondary trigeminal neuralgia. She was not on anticoagulation and did not have any coagulation defects. The pain did not respond well to opioids, SNRI, GABAnergic agent, and benzodiazepine. The patient could not tolerate carbamazepine, and her sleep and mood were significantly affected. Cervical MBB and ESI had no effect. Initially, the patient complained of pain in the V2 distribution, but after a V2 block, the pain on the V3 distribution worsened. Therefore, pulsed radiofrequency ablation was done on V3 first after a nerve block trial on V3. Then, V2 pulsed radiofrequency ablation was done 4 weeks later. Pulsed RFA was done for 2.5 minutes at 42°C with 20msec pulses every 0.5s. The procedures had no complications. The patient reported a VAS score of 0-2/10 without any pain medications 1 month postoperatively.
Discussion/Conclusion: Radiofrequency ablation is gaining popularity as a treatment option for trigeminal neuralgia because it is minimally invasive, effective, and repeatable. With pulsed radiofrequency ablation, pain relief can be obtained without concerns about heat-related complications , such as permanent damage to the motor component in the mandibular nerve (V3). GRF has been preferred due to its high success rate and ability to confirm needle placement by reproducing pain. However, PRF is advantageous in safety because it avoids entry into the cranium, which can elicit devastating complications such as optic nerve injury and intracranial hemorrhage5. PRF's effectiveness has also been validated in recent studies, where it was compared to GRF by a randomized controlled trial6. Furthermore, staged procedures for each branch of trigeminal neuralgia provide a better understanding of the main pathologic location and are better tolerated in elderly patients because PRF usually does not provoke severe pain that GRF has6. Although PRF has a higher recurrence rate3and cannot alleviate pain in the V1 distribution, its benefits in safety and repeatability make it an excellent option for the treatment of trigeminal neuralgia
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Enterococcus avium peritonitis
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Introduction
Enterococcus spp. are part of normal human GI tract flora which has been known to cause community acquired UTI, bacteremia, and nosocomial infections. Enterococcus faecalis and faecium are the most commonly isolated pathogens within enterococcus family although there have been few to no cases reported of peritonitis secondary to enterococcus avium in the setting of recent paracentesis and end-stage-liver disease. The incidence of peritonitis from rare organisms is increasing because of improved microbiological identification techniques. This case is relevant because it shows us that enterococcus avium even if it is not common show be considered when choosing antibiotics coverage for pneumoperitoneum in patients with dialysis.

Case report:
47 years old Hispanic woman with ESRD on hemodialysis, chronic alcoholic liver cirrhosis with recurrent paracentesis, CAD and BMI of 18.74 presented to the ED by EMS with the complaint of vomiting, diarrhea and altered mental status with one day of duration. On admission, the patient was found to have a temperature of 101.6, Heart rate 94, respiratory rate 18 and blood pressure of 96/48. Patient relevant laboratories on admission were remarkable for WBC 23.10, Hemoglobin 9.4, hematocrit of 39, BUN 46 and creatinine of 5.5. Patient was initially admitted to the ward until she deteriorated for which she was transferred to the ICU. On the ICU patient was diagnosed with multifactorial shock, septic and hypovolemic. Further workup showed evidence of peritonitis in the setting of perforated hollow vicus for which she was started on combination of antibiotics and antifungal. General surgery was consulted which recommended conservative management due to comorbidities. Perito,neal fluid was drained and showed ESBL E. Coli, Enterococcus avium and clostridium perfringens. The patient was discharged to hospice and on further follow up patient peritonitis resolved.
Conclusion: Enterococcus avium is a microorganism with low virulence that can cause opportunistic infections. When peritonitis is suspected in the setting of multiple comorbidities, or immunosuppression. Enterococcus avium should always be considered as a differential etiology. This condition is rare and recent diagnostic methods aid in the identification of this organism. Even though E. avium is usually sensitive to most antibiotics, septic shock can develop. For instance, prompt identification and timely initiation of antibiotics and appropriate intervention will prevent mortality associated with this organism.

Evaluation of Vitamin B12 levels in patients with Type 2 Diabetes Mellitus taking Metformin in the ambulatory care setting.
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Background
Metformin is the most widely used oral, anti-hyperglycemic medication, prescribed to more than 100 million people across the entire globe (1). Although Metformin has proven beneficial for patients with pre-diabetes, type 2 diabetes, insulin resistance, and PCOS, studies have also shown its use may be associated with vitamin B12 deficiency. Due to a lack of screening criteria, B12 deficiency is likely unrecognized in the ambulatory setting. Our project aimed to improve screening for vitamin B12 deficiency in our clinic amongst patients with diabetes on long-term metformin therapy.
Methods
Clinic data was collected from July 1st, 2020, to July 1st, 2022, for a retrospective analysis. After analyzing the initial data, our intervention was initiated as a lecture educating our UTRGV-DHR internal medicine residents on vitamin B12 screening in patients taking Metformin. After the intervention, clinic data was securely collected from January 13th, 2023, to March 1st, 2023, for proper analysis to compare the rates of vitamin B12 screening before and after the intervention.
Results
Of 266 patients in our preintervention data, 164 met the exclusion criteria. Of the remaining 102 patients, 18 were appropriately screened for B12 deficiency in the setting of metformin use, equivalent to 17.65% of the total population. Only three patients were found to have B12 deficiency, and all of them received appropriate treatment. After the intervention, the patient´s charts were again evaluated to assess for change in the screening rate. Of the initial 102 patients who met the selection criteria, only 53 were followed up post-intervention. Eight patients were screened for vitamin B12 deficiency, equivalent to 15.09% of the total population. Of these eight patients, two patients did not have a result available on the medical records, four patients had normal B12 levels, and two patients were found to have B12 deficiency. Only 1 of 2 patients received appropriate treatment since the second patient was also lost to follow-up.
Conclusion
Our intervention did not result in an increased screening rate for B12 deficiency in the ambulatory setting. Despite our efforts, our project had multiple limitations, including an underserved patient population, elevated test costs, a high rate of patients lost to follow-up, and the impact of COVID-19 in healthcare during 2020 and 2021. Further studies are needed to evaluate if Vitamin B12 should be part of the routine screening of Diabetic patients on Metformin.

From carious to salivarius: A case of Streptococcus Salivarius Infective Endocarditis

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Background
Streptococcus salivarius forms part of the Viridans family which accounts for almost 40% of all endocarditis cases. However, S.salivarius is only attributed to 2% of those cases. In the most common setting, S.salivarius is a commensal bacterium of both the oral mucosa and the gut, but it has proven to have infective potential. S.salivarius accounts as an easily missed and commonly misdiagnosed Viridians strep species, but has been implicated as a rare cause of infective endocarditis.
Case presentation
We present the case of a 43-year-old male who presented with worsening fatigue, chest pain, shortness of breath, and subjective fever. Physical examination revealed a di Novo systolic murmur, splinter hemorrhages in nails, and petechial lesions on the soles. A transthoracic echocardiogram revealed a bicuspid aortic valve with mild aortic and tricuspid regurgitation, severe mitral regurgitation, mild left atrial dilation, and left ventricular concentric hypertrophy. The patient was started on vancomycin and ceftriaxone due to the concern of infective endocarditis. A transesophageal echocardiogram revealed a 1.3 cm abscess-like structure on the atrial side of the anterior mitral valve leaflet extending into the aortic root. Blood cultures grew Streptococcus Salivarius. A maxillofacial CT did not reveal any tooth abscess, and an abdominal CT to look for secondary sources of abscess and to rule out neoplasia was also negative. During the third day of hospitalization, the patient presented right eye visual disturbances. A brain MRI revealed a left occipital lobe lesion consistent with septic emboli. The patient continued with IV antibiotics and was closely monitored for systemic symptoms of infection, right eye symptoms resolved without further intervention. Blood cultures were periodically analyzed to assess bacteremia clearance, and no growth was reported since day 3 of admission. On the 12th day of hospitalization the patient underwent aortic and mitral valve replacement and after recovery he was discharged home.
Conclusion
As it is well known, the presence of bacteremia along with a di novo murmur in a patient with fever is strongly suggestive of infective endocarditis. Our patient fill two major modified Duke's criteria and two minor. In addition, both TTE and TEE revealed a bicuspid aortic valve which could have contributed to the patient´s IE presentation. Streptococcus Salivarius is a rare organism encountered in IE cases. However, it has proven to have infective potential to the CNS, cardiovascular, musculoskeletal, and gastrointestinal system. Hence, raising awareness of this bacteria as a potential cause of IE should be brought up into the medical community in order to both, consider the diagnosis and prevent related systemic complications.

Grey Turner's Sign Unveiling a Rare Case of Neuroendocrine Tumor in the Tail of the Pancreas: A Reminder to Expand the Differential in Young Patients with Chronic Back Pain

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Background: Pancreatic cancer is often difficult to diagnose due to its asymptomatic nature, silent progression or symptoms overlapping with more common benign conditions. We present a case of a 30-yearold male with chronic worsening back pain, weight loss, and Grey Turner's sign, ultimately leading to the diagnosis of a neuroendocrine tumor in the tail of the pancreas. The rarity of this diagnosis in a young patient with atypical symptoms emphasizes the importance of considering uncommon diagnoses and expanding differentials, even when presented with seemingly typical symptoms, to enable early detection and intervention.
Case Presentation: 30-year-old male past medical history of hypertension, morbid obesity, and chronic back pain that started in 2017 after a motor vehicle collision. However, the pain worsened in January 2023, requiring consistent NSAID for attenuation, multiple visits to the emergency department, and follow-up visits with his PCP and chiropractor. On a routine follow up with his PCP and posterior to MRI, he was found to have a herniated disc; however, his back pain continued to intensify, and NSAID requirement increased. Additionally, the patient had a weight loss of around 100 pounds in less than a year. In April 2023, he went to the emergency department due to excruciating back pain, jaundice, abdominal distention, bloating, flank pain, and a hematoma over his left lower abdomen. He also presented with bilateral leg edema and dyspnea on exertion of 24 hours of evolution. Blood work revealed cytopenia (anemia and thrombocytopenia). CT of the abdomen revealed a pancreatic tail mass with multiple diffuse liver nodules concerning metastatic disease and hepatosplenomegaly. The liver biopsy was consistent with metastatic carcinoma of pancreatic origin, categorized as neuroendocrine neoplasm. Posterior to stabilization in the hospital the patient decided to pursue palliative chemotherapy.
Conclusion: This case demonstrates the importance of considering rare diagnoses in young patients with chronic back pain and associated symptoms. Despite the typical late-stage diagnosis of pancreatic cancer, this unique presentation underscores the significance of diligently exploring alternative causes when common symptoms fail to respond to treatment. Physicians must remain vigilant and expand their differentials when encountering atypical presentations to ensure timely and accurate diagnoses.

Hemophagocytic Syndrome

Mehta, R. Akhtar, B.

Background: Hemophagocytic syndrome is a rare and potentially fatal disorder characterized by abnormal immune activation leading to multiorgan dysfunction. Although genetic mutation is the most common cause in the pediatric population, adults often present with HPS secondary to infection, autoimmune disease or malignancy. Hodgkin's lymphoma is a type of lymphoma characterized by Reed Sternberg cells. HL can cause various complications including hemophagocytic syndrome. This is a case of a 22-year-old male with incidental pancytopenia and jaundice, found to have Hodgkin's lymphoma and hemophagocytic syndrome.
Case Presentation: A 22-year-old male with no significant past medical history presented to the Emergency Department with fatigue, malaise, fevers and jaundice for three weeks prior to arrival.
Laboratory investigations showed a hemoglobin of 12.1, WBC 0.88, platelets 49,000. Other pertinent lab findings included creatinine 2.21, bilirubin 11.34, ALT 522, AST 751, alkaline phosphatase 1166. Additional investigations revealed incidence of hemophagocytic syndrome, including ferritin 43034, LDH 1400 and triglycerides 405. A non-contrast CT Abdomen and Pelvis was performed to evaluate for underlying malignancy which showed the liver and spleen to be enlarged, measuring 23 cm and 19 cm respectively and nonspecific, moderate amount of retroperitoneal adenopathy. An excisional retroperitoneal lymph node biopsy demonstrated Hodgkin's lymphoma with presence of Reed Sternberg cells. The patient was started on pulse Dexamethasone and Gemcitabine followed by weekly Cisplatin. He was not able to be treated with the standard therapy for Hodgkin's lymphoma secondary to renal and liver dysfunction. He then received chemotherapy with Doxorubicin and Dacarbazine. The renal and liver function continued to improve and then received two cycles of ABVD. Follow up PET scan showed residual 3 cm retroperitoneal lymph nodes around the left iliac artery with a maximum SUV of 2.8 suggestive of posttreatment effect. He then completed six cycles of chemotherapy. Another PET scan thereafter showed complete metabolic response. He responded well to treatment with improvement in pancytopenia, jaundice and resolution of hepatosplenomegaly.
Conclusion: HPS is a rare but serious complication of Hodgkin's lymphoma with an incidence ranging from 4 to 10%. The systemic inflammation that characterizes the disease is the result of inappropriate and dysregulated activation of natural killer (NK) cells, CD8+ cytotoxic T-cells, and macrophages. The disease is classified as either primary or secondary. Patients with primary disease present early in childhood, whereas those with secondary disease present as adults with an associated acute illness, most commonly sepsis or a hematologic malignancy. Hemophagocytic syndrome can occur at any stage of the disease and its clinical presentation can overlap with HL, making early diagnosis challenging. The pathogenesis of HPS in HL is not fully understood, but it is believed to be related to the cytokine storm that occurs in response to the malignant cells. The treatment of Hodgkin's lymphoma associated hemophagocytic syndrome involves the management of both HL and HPS. Chemotherapy is the mainstay of treatment for HL and high doses of steroids are used to suppress the immune response in HPS. Supportive care including blood transfusions and prophylactic antibiotics is also essential.

Hiding in Plain Sight: Renal Cell Carcinoma due to Suspected Von Hippel-Lindau Syndrome

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Background: Von Hippel-Lindau (VHL) is a hereditary autosomal dominant disease that affects several organs, characterized by the presence of cysts and tumors, more commonly associated with the central nervous system, eyes, and visceral organs. Prevalence in the US is estimated to be 1 per 30,000. In this case, we present a 31 year old male from an underserved population in the Rio Grande Valley, presenting with multiple cerebellar and visceral lesions. The rarity of genetic disorders proves to be a diagnostic and management challenge.
Case Presentation: The case is about a 31 year old male with no apparent past medical history who presented to an outpatient clinic for establishment of care. The patient had a past surgical history that included an unspecified benign tumor of his left eye, for which he underwent enucleation. The patient's family history was positive for Von Hippel-Linda's in his father, who passed away from a brain tumor that was complicated with an intracranial hemorrhage. The patient followed-up in Mexico with yearly surveillance with abdominal ultrasounds and head CT scans. The patient had been to his primary care physician in Mexico, who told him he had a renal mass in his right kidney after undergoing a surveillance abdominal ultrasound. At the time of that visit, the patient was only complaining of intermittent dysuria, without associated fevers, chills, suprapubic tenderness, costovertebral angle tenderness or hematuria. During that visit, the patient had a CBC, BMP, CT of the abdomen, and MRI of the brain. Laboratory testing was unremarkable, however, CT of the abdomen reported presenceof a mass in the pancreatic tail measuring 1.8 x 2.7 cm, a right renal mass consistent with renal cell carcinoma (RCC), and additional enhancing lesion in the left kidney, also suggesting RCC. MRI of the brain showed bilateral cerebellar punctuate masses in the upper and lower sides of the cerebellum measuring 3mm each, and upper left cerebellum mass measuring 6.5mm, and a left lower cerebellum mass measuring 3mm. The patient was contacted for results, and referred for Urology for evaluation of RCC, and referred to Neurosurgery for evaluation of cerebellar masses. Additionally, the patient was referred to Hepatobiliary Surgery for evaluation. Gastroenterology was also consulted for possible fine needle aspiration of pancreatic masses via Endoscopic Ultrasound (EUS).
Conclusion: The diagnostic evaluation of genetic disorders should be individualized according to the history and physical examination findings of the patient. Physicians should have low threshold of suspicion for Von Hippel-Lindau or other genetic disorders in patients presenting with multiple cysts or masses. History taking and physical examination are still a crucial part of medicine, despite the advancesof the digital era, as patients can beasymptomatic, despite having multiple affected organs. Management can be challenging, given the rarity of the disease. Further research on similar cases is needed to establish a general recommendations.

HAPE(High-Altitude Pulmonary Edema)-Hiking Trip from Texas to Colorado Turns into Nightmare-

Authors: Cho, Eunbee & Daza, Jessica & Ganiyu, Shakirat

INTRODUCTION: High-altitude pulmonary edema (HAPE) is a non-cardiogenic pulmonary edema that typically occurs in lowlanders who ascend rapidly to altitudes greater than 2,500 meters to 3,000 meters (8,200 feet to 10,000 feet) above sea level. Risk factors for developing HAPE include a history of high altitude illness, rapid ascent without acclimatization, and comorbidities that impair ventilation or respiration. The southern part of Texas is one of the regions with the lowest altitude in the United States. It has proximity to Colorado, well known for its Rocky Mountain National Park, with elevations from 7,890 feet to 14,259 feet. This case presents the Southern Texas resident who developed HAPE from a hiking trip to Colorado Rocky Mountains. It highlights the importance of raising awareness of HAPE and its preventive measures among Southern Texas residents and physicians.

CASE: A morbidly obese 58-year-old latin american male with hypertension presented to the ED with shortness of breath, headache, and frothy pink sputum throughout the week. He started developing these symptoms on the first day of his family trip to Colorado Mountain, where he ascended to 14,000 feet in one day. He stayed at a cabin for five days, thinking the symptoms would resolve with rest. However, symptoms worsened, and he presented to the emergency department one day after the descent.

On admission, vitals were 98.1 F, blood pressure 138/73 mmHg, pulse rate 74, respiratory rate 28 breaths/min, and pulse oximetry showed saturation of 95% on room air at rest. Bibasilar crackles were heard on chest auscultation. The chest radiograph showed pulmonary edema with patchy infiltrate bilaterally, and the CT Angiogram Chest showed scattered areas of ground glass pattern bilaterally. He was diagnosed with HAPE and was treated with bed rest and supplemental oxygen for two days. On day 2 of admission, he had remarkable improvement and was discharged after passing a 6-minute walking test off oxygen.

DISCUSSION: This case report highlights the following points:

- Slow ascent and descent is the most effective method for preventing HAPE. This patient ascended 14,000 feet in one day, which is the risk factor for severe

high-altitude illness. Graded ascent with adequate time for acclimatization, avoidance of vigorous exercise, and avoidance of alcohol or sleeping pills are essential tips for preventing HAPE.

- Southern Texas is one of the regions in the US with the lowest altitude. The altitude of the destination and the original residence can contribute to HAPE's development.
- In this patient with morbid obesity of BMI 42.43, obstructive sleep apnea or obesity hypoventilation syndrome was suspected. This underlying comorbidity made him suffer more compared to other family members.

In conclusion, for lowlanders of Southern Texas planning a hiking trip, it is crucial to be aware of HAPE and to consult healthcare professionals to receive appropriate education on acclimatization strategies and preventive measures.

Hodgkin's Lymphoma-Associated Thoracic Central Venous Obstruction

Author: Cho, Eunbee

INTRODUCTION: Hodgkin's lymphoma is a malignancy of the lymphatic system characterized by the presence of Reed-Sternberg cells. B symptoms, lymphadenopathy of the cervical and/or supraclavicular nodes, and mediastinal mass are some common initial clinical manifestations of Hodgkin’s lymphoma. This abstract presents a case study of a 33-year-old man diagnosed with type IV classic type nodular Hodgkin’s lymphoma who presented with brachiocephalic vein compression, resulting in left chest wall edema. This case highlights the importance of recognizing and investigating uncommon presentations of Hodkin's lymphoma to ensure timely diagnosis and management.

CASE: A 33-year-old man without significant past medical history presented with worsening shortness of breath on exertion and the swelling of the left chest wall and arm in the setting of enlarging mass in the left supraclavicular area for four months. Physical examination revealed evidence of the left supraclavicular adenopathy and edema of the left chest wall and arm. He had decreased breath sounds and dullness to percussion two-thirds of the way up on the left lung. A chest radiograph revealed an extensive left pleural effusion for which he underwent thoracentesis. Fluid analysis from left thoracentesis revealed a malignant pleural effusion. A CT of the chest, abdomen, and pelvis revealed multiple confluent lymphadenopathies in the prevascular, left supraclavicular, axillary, high paratracheal, bilateral perihilar, and epiphrenic region, as well as left moderate pleural effusion, mild right pleural effusion, and mild pericardial effusion, and the evidence of stenosis of the left brachiocephalic vein from the lymphadenopathy. He underwent an excisional biopsy of one of the supraclavicular lymph nodes, with final pathology revealing classical Hodgkin lymphoma, nodular sclerosing type. The patient was referred to an interventional radiologist for a stent placement of the left brachiocephalic vein and was started on doxorubicin, vinblastine, dacarbazine(AVD), and brentuximab therapy.

DISCUSSION: This case report underscores the importance of considering Hodgkin's lymphoma as a differential diagnosis in patients with unusual manifestations such as chest wall edema. Chest wall edema can be a rare presenting feature of Hodgkin's lymphoma, and itsunderlying etiology should be carefully evaluated. In this case, the left brachiocephalic vein was externally compressed from the mediastinal lymphadenopathy leading to left chest wall edema. Prompt recognition and multidisciplinary management, including vascular intervention and chemotherapy, would be optimal in bringing a favorable outcome for the patient. Awareness and recognition of the atypical presentations of Hodgkin's lymphoma are needed to improve early detection and optimize treatment outcomes.

Improving inpatient hyperglycemia through an internal medicine resident and pharmacy audit and feedback quality improvement project

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Background: Although the advantages of proper glycemic control in hospitalized patients with diabetes are well-established, a variety of barriers limit accomplishment of blood glucose targets. Inpatient hyperglycemia is associated with an increase in morbidity and mortality, number of re-hospitalizations, and length of hospitalization. Our aim was to decrease the number of glucose values above 180mg/dl in non-critical care hospitalized patients using an audit and feedback intervention with pharmacy and internal medicine residents.

Methods: A resident-led multidisciplinary team implemented the quality improvement (QI) project including conception, literature review, educating residents, iterative development of audit and feedback tools, and data analysis. The multi-disciplinary team met every 5 weeks and undertook three “plan-do-study-act” cycles over an 8-month period (August 2022 to March 2023) to educate residents on inpatient hyperglycemia management, develop and implement an audit and feedback process, and assess areas for improvement.

Results: We performed 1045 audits analyzing 16,095 accu-checks on 395 non-duplicated patients. The majority of audits showed compliance with guidelines. We have a monthly run-on chart showing percent of glucose values above 180mg/dl in our non-ICU hospitalized patients as well as an overall pre to post comparison of 25.1% to 23.0% (p-value <0.05). The feedback was well-accepted by residents evidenced by survey results.

Conclusion: We did not meet our primary aim to reduce hyperglycemia by 30% and this combined with the audits showing mostly compliance with guidelines suggests that prescribing behavior was not a key driver of inpatient hyperglycemia in our population. This internal medicine resident and pharmacy interprofessional collaboration with audit and feedback for inpatient hyperglycemia was feasible, well-accepted and had a statistically significant yet small improvement in inpatient hyperglycemia. The project may be helpful to others wishing to explore inpatient hyperglycemia, interprofessional QI with pharmacists, resident-led QI and audit and feedback.

Navigating the Viral Maze: A Twisted Tale of EBV-Induced Autoimmune Hemolytic Anemia with Hepatitis

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Background: Epstein Barr Virus (EBV) is a widely disseminated virus known to cause infectious mononucleosis and a range of associated conditions. Autoimmune hemolytic anemia (AIHA) is a rare complication of EBV infection, with only a small percentage of cases reported in the literature. We present a unique case of a young female patient with a complex autoimmune pattern, later found to be associated with EBV.

Case Presentation: A 22-year-old Hispanic female with no past medical history presented to the Emergency Department with generalized weakness, nausea, left upper quadrant pain, and jaundice progressing for one week. Physical examination revealed scleral icterus, jaundice, and splenomegaly. Laboratory tests indicated microcytic anemia, abnormal liver enzymes, high levels of serum lactate dehydrogenase, and bilirubinuria. Extensive workup ruled out common viral etiologies, narrowing down the differentials to an autoimmune pathology causing hemolytic anemia coexisting with hepatitis. Further investigations revealed Coombs-negative AIHA. Flow cytometry showed activated T cells, supporting a reactive condition such as viral infection. Treatment involved initiating oral steroids for immunosuppression and iron replenishment. The patient showed clinical improvement with declining liver enzymes and was discharged for outpatient follow-up. A positive Epstein Barr virus PCR test confirmed EBV as the likely trigger for the autoimmune cascade.

Discussion: EBV infection can occasionally initiate an autoimmune cascade, leading to conditions such as AIHA and hepatitis. While infectious mononucleosis commonly presents with fever, pharyngitis, and lymphadenopathy, our patient lacked these typical features. The pathophysiology of Coombs-negative AIHA remains uncertain, but low antibody titers may contribute to negative test results. Our case highlights the successful use of oral steroids without transfusion and the potential need for additional treatments in more severe cases. The importance of considering a broad range of differentials and maintaining a high clinical suspicion is emphasized.

Conclusion: Early diagnosis and treatment based on clinical suspicion are crucial in cases of EBV-associated AIHA with hepatic dysfunction. Immunosuppression with steroids should be considered as a potential therapeutic approach. Despite limited reports in the literature, recognizing the coexistence of EBV-associated Coombs-negative AIHA with hepatitis is important. Further studies are needed to explore this association in a larger population.

Spinal Cord Injury After Revisional Placement of Percutaneous Cervical Spinal Cord Stimulator in the Patient with Cervical Central Canal Stenosis: A Case Study

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Summary of background data: Spinal cord injury is a rare but devastating complication of spinal cord stimulator implantation; the incidence has been reported variably, ranging from 0.45 to 2.13% 1 .
Objectives: To report a case of spinal cord injury developed postoperatively after revisional spinal cord stimulator placement in a patient with cervical central canal stenosis.
Methods: A case study
Results: Spinal Cord Injury ASIA scale C
Case Description: A 51-year-old female with 5-year chronic neck pain with radiating pain on both upper extremities came with lower extremity weakness and ataxia after revisional cervical spinal cord stimulator placement. In April 2021, she underwent primary placement of a percutaneous spinal cord stimulator which lost its effect after 3 months due to lead migration. Ten months later, ACDF on C5/6 had been done by a different provider, it did not help her pain either. After 4 months, she underwent the removal and replacement of the cervical spinal cord stimulator, and lower extremity weakness and ataxia developed immediately after the procedure. No immediate management was done. She had undergone ACDF on C4/5 for further decompression, but no improvement was seen. Despite the removal of a spinal cord stimulator on POD 8 months regarding further compression of the cord or cord irritation, she has minimal improvement in her lower extremities one month after.
Discussion/Conclusion: Spinal cord injury can result from direct trauma by needle puncture and lead placement during percutaneous spinal cord implantation. The revision procedure needs a cautious approach because fibrotic tissue from previous surgery complicates the approach to epidural space2 . Cervical stenosis is noted as a significant risk factor due to compromised crosssectional area in the spinal canal which increases cord compression and contusion during the advancement of leads3 . Thus, consideration should be given to revisional cervical cord stimulator implantation in cervical central canal stenosis.

Spindle-Cell Mesothelioma Arising From The Right Pleura: A Case Report And Review of the Literature

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Background:
Spindle cell mesothelioma, or Sarcomatoid mesothelioma, is a rare and insidious type of malignant mesothelioma with a high mortality rate. It arises from mesothelial surfaces of the pleural cavity, peritoneal cavity, tunica vaginalis, or pericardium, and it is usually associated with asbestos exposure. Spindle cell mesothelioma could be challenging to treat because most patients have advanced disease at presentation with an average prognosis of six months. In this case report we present a rare case of spindle-cell mesothelioma arising from the right pleura.
Case presentation:
An 82-year-old male with a history of atrial fibrillation and coronary artery disease, status post-stenting in February 2023, was admitted with worsening shortness of breath (SOB) for the last four weeks. He experienced SOB even at rest and more severe with walking. Furthermore, he reported generalized weakness and decreased oral intake. Initial vital signs included RR 24 bpm and SpO2 of 88% on room air. Physical exam revealed normal breath sounds on the right lung but was noted to have dull percussion and increased tactile fremitus. Chest X-rays revealed opacification of the whole right lung with minimal residual aeration of the right apex and mediastinal deviation to the left. CT scan of the chest without contrast showed right lung collapse with a large and thick-walled irregular pleura and large pleural fluid collection. Thoracentesis was performed, and approximately 1600 cc of bloody pleural fluid was sent for diagnostic studies and to treat the SOB. Fluid analysis was consistent with exudative pleural
effusion, lymphocyte-predominant cells, and normal levels of adenosine deaminase enzyme. Given a history of exposure to asbestos when he worked in the shipyard for more than 40 years, mesothelioma was the first working diagnosis. Subsequently the pleural biopsy confirmed the diagnosis of malignant spindle cell neoplasia with a CDKN2A gene heterozygous deletion giving the patient a poor prognosis. Following the patient's wishes a do-not-resuscitate (DNR) and do-not-intubate (DNI) order was placed and he passed away due to acute respiratory failure and the development of hospital-acquired pneumonia in the left lung.
Conclusion:
Spindle cell mesothelioma, a rare form of malignant mesothelioma, manifests its effects several years after the initial exposure. When symptoms eventually appear, the prognosis is typically unfavorable due to late diagnosis and advanced disease. Although spindle cell mesothelioma is not directly treated, the shortness of breath can improve with therapeutic thoracentesis which is considered the optimal choice. In our patient's case, the analysis revealed that 32% of the examined cells exhibited a hemizygous deletion of CDKN2A. This finding suggests that Spindle cell mesothelioma can arise not only from a homozygous deletion but also from a hemizygous deletion of the CDKN2A gene.

Spontaneous Iliopsoas Hematoma secondary to Warfarin toxicity

Garcia Cruz, Jian, Perez Rodriguez, Julio, Kondapavuluru, Roy, Abarca Guzman, Oliverio, Chaglasian, Johanne and Jonathan Gyebi-Agyepong

Abstract

Warfarin is a commonly prescribed anticoagulant with a narrow therapeutic window. The prevalence of retroperitoneal hematoma in the general population is not well documented, but it is estimated to be less than 1%. However, the incidence is higher in patients taking anticoagulants such as warfarin, with some studies reporting an incidence as high as 3-6%. Iliopsoas hematoma is reported in literature with frequent non-specific symptoms ranging from abdominal, leg and thigh pain. It is important to recognize them due to the high mortality. This paper aims to demonstrate that patients on warfarin with low hemoglobin and purplish bruises of different sizes should rule out spontaneous hematomas. The purpose of this paper is a reminder for us as physicians that people on warfarin should have close follow-up to avoid complication of supratherapeutic of warfarin.

Case report

74 years old man with past medical history of non-valvular atrial fibrillation on warfarin, congestive heart failure and chronic kidney disease presented to the emergency department refer by his primary care doctor complaining of pain in left thigh that has been going on for 5 days. Patient denies any trauma. On physical examination was remarkable for pale conjunctiva and purplish bruises of different sizes were seen on left flank area and on the L thigh. Patient initial laboratories at the ED were Hb of 11.7, hematocrit 35.4, PT 88.9, INR >8 and PTT 48.8. CT remarkable for extensive asymmetric enlargement of the left iliopsoas muscle is present which is consistent with iliopsoas intramuscular hemorrhage. Retroperitoneal blood extended superiorly in the left retroperitoneum and left paracolic gutter. US done on the second day demonstrated a heterogeneity of in the left flank which correlated with left side retroperitoneal hematoma measuring 12x7x11.5. US of lower extremities showed no DVT and two intramuscular thigh hematomas the largest one measuring 5.8x2.5x4 cm. Surgery was consulted which recommended conservative management given his stable hemodynamic status without worsening symptoms or worsening of the radiographical findings. Warfarin was initially reversed with vitamin K and Prothrombin complex concentrate.

Conclusion

Warfarin has a high potential for serious complications. Despite prescription compliance and regular INR control, warfarin has been associated with spontaneous hemorrhagic events. Warfarin can be an effective treatment for preventing blood clots, but it can also increase the risk of bleeding and spontaneous hematoma formation in some patients. If a patient develops a spontaneous hematoma while taking warfarin, there are several treatment options available, including stopping the medication, receiving a blood transfusion, or using prothrombin complex concentrate. Spontaneous hematoma can be managed with surgical intervention, arterial embolization or conversative with close monitoring and transfusion as needed. Regular monitoring of INR levels and close communication between the patient and healthcare provider can help prevent retroperitoneal hematoma while on warfarin.

Syncope as a presentation of Waldenstrom Macroglobulinemia

Jian Garcia-Cruz, Julio Perez Rodriguez,Roy Kondapavuluru, and Eunbee Cho

Abstract

Syncope as defined by ACC/AHA is defined as a symptom that presents with an abrupt, transient, complete loss of consciousness, associated with inability to maintain postural tone, with rapid and spontaneous recovery without clinical features of other non-syncope causes of loss of consciousness, such as seizure, antecedent head trauma, or apparent loss of consciousness. Syncope is a common complaint treated in the emergency department and a major reason for hospital admissions. Identification of the etiology of syncope is important for diagnostic and therapeutic purposes. Syncope is a symptom as a presentation with multiple differential diagnosis listed and clearly explained by ACC/AHA. A rare etiology to this common symptom is Waldenstrom macroglobulinemia. Waldenström macroglobulinemia is a rare and currently incurable neoplasm of IgM-expressing B-lymphocytes that is characterized by the occurrence of a monoclonal IgM paraprotein in blood serum and the infiltration of the hematopoietic bone marrow with malignant lymphoplasmacytic cells. Common symptoms are fatigue, unexplained weight loss, nose bleeding, peripheral neuropathy, infections, and change vision. Neurologic manifestations of WM include visual or auditory disturbances, headache, confusion, dizziness, vertigo, stroke and rarely, syncope. We present a patient with multiple comorbidities who was presented to the emergency department after multiple episodes of syncope ultimately diagnosed with Waldenstrom macroglobulinemia.

Case

A 49-year-old man presented to the emergency department, referred by his primary care doctor, for hypercalcemia. On review of records, the patient was noticed to have been seen previously in emergency visits for two episodes of syncope and recurrent anemia. The laboratory studies at the time of admission were remarkable for hemoglobin of 7.3, WBC of 8.32, hematocrit of 28.5, MCV 77.2, platelets of 124,000. Complete metabolic panel showed a total protein of 13.1, calcium of 11.2 with an albumin of 1.6 and corrected sodium of 117. EKG demonstrated a sinus rhythm with left atrial enlargement and nonspecific T wave abnormalities. Echocardiogram demonstrated a LVEF of 60-65% with normal LV wall motion, posterior wall thickness, and septal wall thickness with grade 1 diastolic dysfunction. CT of the head was unremarkable. Further work up for recurrent microcytic anemia demonstrated iron 255ug/dL, TIBC 221ug/dL, Iron saturation > 100%, ferritin 4.0. Reticulocytes, vitamin B12 and folate were within normal range. PT/ INR/ PTT were all increased at 14.0/ 1.32/ 52.1. Peripheral blood smear demonstrated normal absolute lymphocyte count with a few lymphocytes demonstrating more plasmacytoid morphology potentially compatible with terminally differentiated B-cell/plasma cell. Due to the abnormal finding, urine protein electrophoresis was performed, which revealed M-spike.

Serum immunofixation showed IgM monoclonal protein with kappa light chain specificity and IgG monoclonal protein with kappa light chain specificity. Other relevant studies including serum electrophoresis, serum Ig K free light chain levels and serum viscosity were ordered but could not be performed due to hyperviscosity of patient's serum. Bone marrow biopsy was obtained which demonstrated a lymphoplasmacytic lymphoma with 70% marrow involvement, mildly hypercellular bone marrow with 70~80% hypercellularity with trilineage hematopoiesis. Flow cytometry reported a kappa-restricted population of B-cells and a kapparestricted population of plasma cells. Immunohistochemistry panel showed 6.2% population showing CD19(+). CD20(+). CD38(+), CD45(+), kappa(+) and 4.7% population showing CD19(+), CD38(+). CD45(+), CD138(+), kappa(+). These findings along with clinical picture were consistent with Waldenstrom macroglobulinemia. The patient was initiated on chemotherapy with bortezomib and plasmapheresis, given the bulk of the disease. Further follow up revealed that the patient has not had any other syncopal episodes since initiation of treatment.

Conclusion

Although current literature suggests a broad differential diagnosis for the symptom of syncope, Waldenström macroglobulinemia remains a rare etiology of syncope with an estimated incidence of 1000 to 1500 cases diagnosed per year. Waldenstrom macroglobulinemia can cause hyperviscosity syndrome in about 30 percent of the population with Waldentroms, which when severe and coupled with anemia and plasma volume expansion has been reported as a rare cause of syncope. Symptomatic hyper-viscosity is a medical emergency and should be treated as such. Our patient presented with syncope as a chief complaint secondary to coagulopathy secondary to hyper-viscosity syndrome from paraproteinemia, multifactorial anemia (component of iron deficiency as well as involvement in the bone marrow by lymphoplasmacytic lymphoma), and hypercalcemia. Syncope evaluation should be detailed with history and physical examination and hyper-viscosity syndromes, a medical emergency, should be considered as differential diagnosis of syncope.

Tick-Borne Illness in a Guatemalan Migrant

Mehta, R. Akhtar, B.

Abstract:

Migration is a complex phenomenon that involves numerous physical and psychological challenges, particularly for individuals undertaking long and arduous journeys. In the case of this 39 year old Guatemalan man, his perilous 25-day journey crossing forests to reach the United States resulted in severe health consequences, including dehydration, acute kidney injury and a possible tick-borne illness. This case report aims to shed light on the healthcare needs of migrants and emphasizing the importance of providing comprehensive care.

A 39 year old male from Guatemala presented to the emergency department with diffuse abdominal pain associated with nausea, vomiting and a recent tick bite on his forearm. A tick was removed from his left forearm and right axilla. The patient reported exposure to extreme heat, limited access to food and water during his journey, and being apprehended by border patrol to be put in the cell. He described progressive symptoms over the course of two days, prompting him to seek medical attention.

On physical exam, he appeared severely dehydrated with dry mucus membranes and decreased skin turgor. Lab investigations revealed elevated serum creatinine, hyponatremia, leukocytosis, elevated liver enzymes and elevated markers of rhabdomyolysis, including markedly elevated creatine kinase (4,327). The patient was diagnosed with severe dehydration, AKI and ATN likely secondary to dehydration and severe rhabdomyolysis and possible tick borne illness. IV fluid resuscitation and Doxycycline therapy were initiated promptly. Febrile agglutinin and Rickettsial fever group IgM/G testing resulted negative. Other tick borne illnesses could not be ruled out. Creatine kinase levels continued to rise ranging from 25,771 to 63,189 and thereafter trended down. Nephrology was consulted for recommendations and aggressive hydration was started with isotonic IV fluids at 250 ml/hour. However, patient developed labored breathing, tachypnea and use of accessory muscles requiring increasing oxygen support. Chest x ray demonstrated volume overload and pulmonary edema. He was later transferred to the ICU for further management acute hypoxemic respiratory failure and hydrostatic pulmonary edema. He was treated with IV diuretics and BiPAP support and improved significantly. Patient was discharged after several days with outpatient referral for follow up care.

This case illustrates the health challenges faced by migrants during their journeys, with the patient experiencing severe dehydration, AKI, and a possible tick-borne illness. Prompt recognition and management of these conditions are crucial to prevent complications and provide appropriate care for this vulnerable population. Healthcare providers should be aware of the unique needs and risks by faced migrants, advocating for comprehensive medical care and preventive strategies to mitigate the impact.

Transient Sinus Node Dysfunction in a Postpartum Female with Sinus Bradycardia: A Case Report

Gomez Casanovas J, Baird A, Rincon L, Bartl M, Hernandez D

Background

Conduction disorders are common cardiac complications during pregnancy in women with and without structural heart disease. Sinus bradycardia has been described in few case reports secondary to increased vagal tone. Prevalence of newly acquired sinus node dysfunction without structural heart disease is unknown. In this case, we present a post-partum female with symptomatic acquired sinus node dysfunction who presented with severe sinus bradycardia.

Case Presentation

A 32-year-old Hispanic lady with a past medical history of obesity and obstetric formula of G4P4, who recently delivered her 4th child via C-section 4 weeks prior, presented to the Women´s Hospital as a transfer due to 4-day history of abdominal pain and subjective fever. Patient stated that her delivery was uneventful, and she was discharged 3 days later with iron pills due to recently diagnosed iron deficiency anemia. She complained of sudden onset episodes of subjective fever, that were associated with chills, diaphoresis, and abdominal pain on the incision site. These episodes were not associated with any foul discharge. She denied any history of heart disease in the past. She presented to an urgent care clinic and CT abdomen and pelvis without contrast revealed a collection anterior to the left uterine wall, suspicious for an abscess. She was later transferred to Women´s hospital and her vital signs were T 98.4, HR 65 BPM, RR 18 and BP 122/87 mm Hg. Her physical exam was remarkable for tenderness at the incision site, with no redness, pus expression, rebound or guarding. She was started on broad spectrum antibiotics and underwent emergent CT guided fluid collection with Fentanyl for pain management. Minimal drainage of dark blood was collected. Four days after procedure, patient suddenly became bradycardic. Her vitals were HR 37 bpm, BP 77/51 mm Hg and EKG was consistent with sinus bradycardia. Labs did not reveal any electrolyte abnormalities, cardiac enzymes, TSH and chest radiograph were within normal limits. Due to lack of response to atropine, the patient was transferred to ICU after placement of transvenous pacemaker. Emergent echocardiogram revealed normal left ventricular function, ejection fraction between 60-70% and normal RVSP.
Two days later, her pacemaker was turned off and her baseline was sinus rhythm with a rate in the 60s. Leads of transvenous pacemaker were then removed and she was later discharged with close follow up with Cardiology and OBGYN.

Conclusions

Sinus bradycardia can be due to various medical conditions, including secondary to vasovagal response. This is called hypervagotonic sinus node dysfunction (HSND). HSND can be due to intrinsic abnormalities as well as secondary causes such as infections or drugs. Usually, HSND can be treated with conservative management. In our case, four days after the patient underwent interventional procedure, the patient presented symptoms consistent with sinus bradycardia. Holter monitoring and echocardiogram did not reveal significant abnormalities and after 24-48 hours it improved with conservative measures. This is an uncommon and unexpected presentation; however, further studies are required to understand if there is presence of predisposing factors in such population to present this abnormality.

Use of Translational Science, Continuous Glucose Monitoring in the Primary Care Setting for Management of Nesidioblastosis. A Case Report.

Manandhar, K., Farahneh, O., & Monaco G. M.

ABSTRACT

Background: Nesidioblastosis is a term used to describe histologic changes in the pancreatic cell defined by beta cell hypertrophy and formation of ductoinsular complexes. It is a disease previously most extensively identified in neonates and is a rare cause of endogenous hypoglycemia in the adult population. However, with increasing numbers of gastric bypass surgeries for management of obesity in recent years, there has been a growing number of populations with post gastric bypass surgery related nesidioblastosis.

Case Description: Our case report follows a 60-year-old female with previous history of Roux-en-Y gastric bypass surgery who initially presented to an acute-care hospital with an episode of unprovoked seizure attributed to hypoglycemia and was later discharged to primary care for follow-up. In the primary care setting, patient described her hypoglycemic episodes to be postprandial specifically following carbohydrate containing meals. Further investigations with CT scan, upper gastrointestinal series, fasting insulin, and c-peptide levels showed normal results. A diagnosis of nesidioblastosis was considered after ruling out other causes of endogenous hypoglycemia. Patient was immediately started on continuous glucose monitoring which allowed patient to detect her blood glucose levels, thus regulate her meals, and conservatively manage her hypoglycemic episodes.

Conclusion: For patients with adult-onset nesidioblastosis post Roux-en-Y gastric bypass surgery presenting with mild to moderate hypoglycemia symptoms, better blood glucose control is achievable with conservative management in primary care setting. With increased access to continuous glucose monitoring, patients can identify hypoglycemia episodes early on and manage their symptoms and blood glucose levels with tailored dietary modification. For persistent symptoms, medical management is the next step in therapy followed by surgical management for severe or refractory symptoms.

When medications collide: Demystifying Drug-Induced Hyponatremia in a complex medical case.

Roy Kondapavuluru, Jian Garcia, Manaswini Kakarla, Ram Maganti, Akshay Pingilati, Dr.Andres Suarez

INTRODUCTION:

Hyponatremia, defined as serum sodium below 135mEq/L(normal range:136-145mEq/l), is a medical emergency associated with various complications. Sodium is an important electrolyte that helps regulate fluid balance and nerve/muscle function. Severe hyponatremia may not show obvious symptoms initially but can eventually manifest as nausea, vomiting, fatigue, impaired movement, and in extreme cases, seizures, coma, respiratory failure, or even death.

Thiazide diuretics have been associated with hyponatremia with a sodium level as low as 99mEq/L. In our case, the patient was on bumetanide, a loop diuretic and she developed hyponatremia which worsened with additional metolazone treatment to a sodium level of 102mEq/L with minimal symptoms.

CASE PRESENTATION:

An 82-year-old woman presented to emergency department in South Texas with dyspnea, cough, weakness, fatigue, and headache. She had a history of depression, dementia, obesity, arthritis, osteoporosis, hypertension, hyperlipidaemia, coronary artery disease, chronic atrial fibrillation, and hypertrophic obstructive cardiomyopathy with mitral regurgitation. Her medication regimen included amlodipine 5mg daily, apixaban twice daily, bumetanide 1mg daily, metolazone 2.5mg daily, metoprolol succinate 100mg daily, simvastatin 20mg daily, prednisone 10mg for 5 days, hydrocodone-acetaminophen every 4 hours as needed, and multiple drugs for dementia and depression including aripiprazole 5mg nightly, brexpiprazole 1mg daily, clonazepam 1mg three times daily, donepezil 5mg nightly, duloxetine 60mg twice daily, and zolpidem12.5 mg nightly.

On initial evaluation, her vital signs were within normal range, and her BMI was 38.7. On physical examination, she was in mild distress, with diminished breath sounds at the bi-basilar lobes, and poor inspiratory effort. She had a normal heart rate and rhythm with a 3/6 harsh mid-peaking systolic ejection murmur loudest at the left mid-sternal border and a 2/6 harsh systolic ejection murmur at the apex consistent with HOCM. Labs revealed severe hyponatremia (sodium of 102) along with hypokalemia (2.8mEq/L), hypochloremia (70mEq/L), hypo-osmolarity (serum osmolarity of 227mOsmol/kgH2O and urine osmolarity of 324), and urine sodium of 43mEq.

The patient was admitted to the ICU for hypo-osmolar hypovolemic hyponatremia and pneumonia. She received appropriate treatment, including fluid resuscitation and antibiotics. Throughout her ICU stay, she remained neurologically stable with caution exercised to prevent rapid correction of sodium levels. Over six days, serum sodium gradually normalized and stabilized at 133.

The patient recently had metolazone 2.5 mg daily added to her usual bumetanide 1 mg daily in February 2023 to optimize her heart failure regimen. She also took multiple antipsychotic and antidepressant medications, contributing to her chronic hyponatremia. The combination of diuretic therapy, antipsychotic medication, and antidepressant medication(duloxetine) were identified as the probable causes.

CONCLUSION:

Recording on of the lowest serum sodium levels in a minimally symptomatic patient, this case emphasizes the importance of recognizing drug-induced hyponatremia in patients with complex medical histories and multiple medications. Careful assessment and monitoring of medication regimens, particularly in older adults, are crucial to minimize the risk of drug interactions and adverse effects. Collaborative efforts among healthcare providers are essential to optimize medication management and prevent complications associated with hyponatremia and its correction.

STAFF CATEGORY

Aspects of Glucose Metabolism in Anoikis-induced Colorectal Cells

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Colorectal cancer (CRC) is the second most lethal cancer, and its survival rate drops from 90% to 14% when the condition is contained within the colon *vs.* when found at distant sites within the body. This is concerning because the disease will develop metastasis in 40-50% of patients. Metastasis is a multistep process in which cancer cells gain anoikis resistance to survive after detaching from primary locations and traveling through the circulatory and lymphatic systems to distant target organs. Thus, understanding the molecular drivers involved in glucose metabolism and its role in the anoikis process could be vital for improving the survival of CRC patients. Long non-coding RNA (lncRNA) is a class of RNA that does not directly code for protein but can hold many different roles in the cell. The lncRNA urothelial carcinoma-associated 1 (UCA1) aberrant expression has been identified in CRC and is associated with a poor prognosis. However, its function in glucose metabolism processes is not yet well defined. Our preliminary results in the anchorage-independent growth (anoikis) model demonstrate increased expression of lncRNA UCA1 and glucose uptake. Not only did the overexpression of lncRNA UCA1 lead to higher glucose consumption, but it also had an increased survival of anchorage-independent cells, which could indicate a potential mechanistic role of UCA1 in the modulation of glucose metabolism. Therefore, in this study, we propose elucidating the role(s) of UCA1 and its association with glucose metabolism during anoikis resistance. We hypothesize that the overexpression of lncRNA UCA1 enhances CRC metastasis by changing the glucose metabolism and, therefore, its anoikis resistance-associated pathways. We will utilize isogenic CRC cell lines SW480 (oncogenic) and SW620 (metastatic) to understand the mechanistic regulation of anoikis resistance. Stable overexpression (SW480+UCA1//GFP) and knockdown (SW620+ShUCA1) cell lines have been utilized for this study; both puromycin were selected and sorted. After subjecting these cell lines (along with the respective control) to anchorage-independent growth conditions, glucose pathway markers, pro-survival, anti-apoptotic, and stemness factors will be analyzed through RT-PCR, western blot, and Seahorse analyses. Utilizing the same model, we will examine lncRNA UCA1 linked anoikis resistance specific phosphorylation profiles of kinases and their protein substrates using the Proteome Profiler Phospho-Human Phospho-Kinase Array.

Co-Culture of Retinal Pericytes and Retinal Endothelial Cells

Laura Valdez, Lili Guerra, Richard LeBaron, Andrew Tsin

Background: Human retinal pericytes (HRP) are contractile cells adjacent to and provide support for retinal endothelial cells (REC) of retinal capillaries. One of the earliest events of diabetic retinopathy (DR) is the loss of RP through apoptosis. Pericytes share a common basement membrane with endothelial cells and are most prominent in retinal capillaries in comparison with capillaries in other tissues in the body. The loss of HRP leads to the development of advanced-stage pathology including angiogenesis. In this present study, human HRP and REC in coculture were examined in order to evaluate effects of their interactions and response to exogenous cytokines.

Methods: In a well of 24-well plates, a transwell insert apparatus holding 60,000 REC in the lower chamber and 40,000 HRP on an upper chamber (with a PET membrane) fashioned a two-cell type, no-contact, co-culture system. Additionally, a transwell insert apparatus holding 60,000 HRP in the lower chamber and 40,000 REC on an upper chamber (with a PET membrane) fashioned a coculture system. Cells were left to incubate over night before starting the time course (time Zero). Complete Classic Media (CCM) media in both chambers were changed every 24hr. Viable cell number was determined using a trypan blue dye exclusion method. Cells in the lower chamber were counted twice and there was a total of two transwells per time point. In indicated experiments, REC cells (in the lower chamber) were treated with 10ug/mL of TGF-β 1 for an effect on cell viability.

Results/Conclusions:

Based on growth rates from mono cell type culture system, HRP exhibited a much faster growth than REC (doubling time of 33.56hrs for HRP vs 56.4hrs for REC). When REC were grown with HRP, we observed an decrease in growth rate (doubling time increased to 76.6hrs). In contrast, when HRP were grown with REC, their growth rate decreased substantially (doubling time increased to 44.75hrs). In comparison, the presence of HRP had increased viable REC while the presence of REC decreased HRP in our two-cell type culture system. The addition of TGFb1 did not result in a significant increase in viable REC in both mono and two-cell type systems. Additional experiments are needed to further elucidate how cell-to cell interactions results in stimulation or inhibition of cell growth.

Collection and Analysis of Architectural Features in Streetscapes in South Texas: .

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Background: The built environment of neighborhoods influences the health and well-being of residents. One approach to studying the impact of such a built environment on people's health is through the study of the memorability of the architectural features (AFs) in streetscapes. In this direction, we raise the question: what AFs are more memorable? Understanding how AFs impact cognition will allow us to propose neighborhood designs that consider this finding to foster people's health and well-being. However, AFs in streetscapes are not universal they need to be studied in specific historical, cultural, and geographical contexts. In order to analyze the memorability of the AFs in streetscapes in South Texas, we propose to create "The Collection of Architectural Features (CAFs)," which will hold annotated images of the architecture of South Texas".
Methods: The CAFs database is created with images that use a general schema of a set of AFs that is refined as images are added. These images are sourced from a combination of personal photography, and various reliable architectural image databases. This method is known as a design per prototype. CAFs holds annotated images of streetscapes in general and from the South of Texas. Each image will be selected by an expert, and classified by the architectural feature present in the image. Each image is subject to a detailed annotation process of the AFs present in the image, such as contrast colors, ornaments, vernacular material, rhythm, and others. In addition, each image will have a memorability score calculated through ResMem free software (Needell & Bainbridge, 2022). This annotated information serves as metadata for each image in the database, creating a comprehensive and searchable catalog of architectural elements. Frequency analyses, clustering, and principal component analysis (PCA) will be performed to classify and understand the understand the architectural features with higher memorability score.
Results: The CAF database is progressively growing with a diverse collection of annotated images from South Texas. The detailed annotations, which include elements such as contrast color, ornaments, vernacular material, rhythm, patterns, details, memorability index, symmetry, and others, provide a basis for comprehensive analyses.
Conclusions: We expect that the CAFs database will constitute a robust resource for studying the impact of Afs on cognition. The CAFs database will not only serve as a valuable tool for academic research but also to provide a solid foundation for policymakers, urban planners, and community leaders.

Cucurbitacin D suppresses benzo[a]pyrene-induced liver injury by modulating Nrf2 signaling

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Background: Accumulating studies have shown strong correlation of HCC and co-morbidity factors including smoking. Tobacco smoke contains benzo[a]pyrene, which is extremely carcinogenic and contributes to liver damage. Cucurbitacin, a triterpene, has a wide range of biological activities, including antioxidant, anti-inflammatory, and anti-cancer properties. However, their hepatoprotective effects remain poorly understood. In the current study, we examined the hepatoprotective activity of cucurbitacin D, a novel analog of cucurbitacin, against benzo[a]pyrene-induced liver injury in human HepG2 cells.
Method: To investigate the hepatoprotective effect of cucurbitacin D against benzo[a]pyrene-induced liver damage, proliferation, clonogenicity, migration, invasion, Western blotting, and qPCR analyses were performed. The DCFDA assay was performed to determine the level of intracellular reactive oxygen species (ROS) in liver cells.
Results: Functional assays showed that cucurbitacin D exhibited cytoprotective effects against dose-dependent growth inhibition by benzo[a]pyrene in human HepG2 cells. This protective effect was likely associated with antioxidant potential of cucurbitacin D, as evidenced by the attenuation of ROS observed by fluorimeter and fluorescence microscopy. Western blotting analysis demonstrated Cucurbitacin D targets Nrf-2 signaling pathway and associated effector proteins including HO-1 and LC3A in protecting liver cells against benzo[a]pyrene induce oxidative damage. Further studies are underway to understand the underlying molecular mechanism of action.
Conclusion: These findings demonstrate the hepatoprotective effects of cucurbitacin D against benzo[a]pyrene-induced liver damage, making it a promising ingredient for nutritional supplements.

Design of a Test for Research on Architectural Features of Streetscape

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Background: The architectural experience may impact people's behavior, health, and well-being, engaging several neural networks. Sensory-motor networks mediate motor responses such as approach and avoidance and spatial navigation in response to stimuli. Limbic networks process feelings and emotions. Memory-related networks support personal experiences, education, and culture. The interaction between architecture and brain sciences is known as neuroarchitecture which promises to offer biologically inspired insights into the design of spaces. We are interested in the study of neuroarchitecture applied to the streetscapes of neighborhoods in South Texas. The primary purpose of this study is to design a cognitive test to assess what architectural features are more memorable.

Methods: The primary aim of the proposed test is to assess the content of memories of architectural features of the neighborhood streetscapes. One approach is through visual and mental imagery. Visual mental imagery is used to reactivate long-term memory and manipulate the visual representation of the stimulus in the absence of the corresponding visual stimulus, giving rise to the experience of "seeing with the mind's eyes." Visual mental images are produced by interrogating the longterm memory (reactivating neural representations) about how visual objects look and maintaining them with the aid of working memory to inspect and manipulate them. The proposed test is based on an interview with questions that evoke visual mental imagery of the street, drawings, and verbal descriptions of the street. We hypothesize that the architectural features that are more memorable would be reflected in the drawings and verbal descriptions of the street. To account for the diversity of visual imagery abilities, we will apply the Vividness of Visual Imagery Questionnaire (Marks, 1973). We will systematically compare the street image from Google Street View vs. the drawing and the verbal description from the same segment, and different scores systems will be explored to test reliability and accuracy.
Results: It will be presented results in three conditions. We will first use the segments of the Canva Street View app to select the streets. In this condition, we will go to those street segments and apply the test (interview). In a second condition, we will choose an aleatory sample of people to interview and use the test in a lab environment. After the interview, we need to determine if the street where the participant lives is upgraded in the Google Street View app; if not, we need to go to that street to check the accuracy of the responses. As a third condition, we will choose an aleatory sample of streets to go there and do the interviews. We will also provide the scoring proposal with the analysis e interpretation of the results of each condition.
Conclusions We presented an experimental test to assess the more memorable architectural features. Such a test must be tested first in a pilot study to refine the test and the scoring proposal. After the pilot study, we propose conducting a field study to assess what South Texas architectural features are more memorable.

Electrosprayed Minocycline-loaded PLGA Microparticles for the Treatment of Glioblastoma

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Background: Around 12,340 patients in the US are diagnosed with glioblastoma multiforme (GBM) yearly, and despite the current treatment options, such as chemotherapy, radiotherapy, surgical resection, or a combination of them, the median survival is only about 15 months after initial diagnosis. Minocycline, a tetracycline antibiotic, has shown to inhibit U87 glioblastoma cell death and inhibit angiogenesis, or the creation of new blood vessels as is often needed by the tumor to grow. The utilization of biomaterials such as poly lactic-co-glycolic acid (PLGA) can better sustain the release and bioactivity of loaded drugs. The use of polyethylene glycol (PEG), a hydrophilic polymer, may improve the encapsulation of minocycline into the PLGA microparticles, given its hydrophilic nature. Electrospraying may be a promising method to fabricate drug loaded PLGA microparticles with high drug loading and loading efficiency. Therefore, the objective of this project was to develop electrosprayed minocycline-loaded PLGA microparticles for the treatment of GBM.
Methods: Minocycline-loaded PLGA microparticles were fabricated through electrospraying utilizing an 18 cm needle-tip to glass plate distance, 0.9 ml/hr flowrate, and 14 kV voltage. The solution consisted of 1 ml of chloroform as the solvent and 70 mg of PLGA as the polymer with different minocycline amounts and with or without polyethylene glycol (PEG). The amount of drug loaded into the microparticles was determined by dissolving the microparticles in 1 mL of dimethylsulfoxide and then measuring the absorbance of minocycline at 350 nm. Release kinetics studies were performed by placing the microparticles in phosphate-buffered saline and reading minocycline absorbance of the supernatant at various timepoint. Scanning Electron Microscopy (SEM) was used to determine size and morphology of the minocycline-loaded PLGA microparticles.
Results: The amount of drug loading and loading efficiency increased with the addition of PEG (3.23 ± 0.29 vs. 4.02 ± 0.34 and 49.40 ± 4.49 vs. 64.30 ± 5.47%, respectively) and the utilization of higher amount of drug (4.02 ± 0.34 vs. 9.93 ± 0.64 and 64.30 ± 5.47 vs. 70.76 ± 4.57%, respectively). The release kinetics study demonstrated that the different microparticles experienced a burst release within the first hour (67-80%). The microparticles were spherical in shape and ranged between 4-11 µm in size. The addition of PEG resulted in the aggregation of the microparticles, as observed in SEM imaging.
Conclusions: This study demonstrated that electrosprayed minocycline-loaded PLGA microparticles can be successfully fabricated with high drug loading and loading efficiency and have a spherical shape within the micron size range. PEG was able to increase drug loading of the lipophilic drug by increasing the solubility of the drug in the polymer/chloroform solution. However, the utilization of PEG affected the collection of the particles and therefore, further optimization of the electrospraying parameters needs to be done to improve the collection of non-aggregated microparticles. In addition, given their burst release of minocycline, the microparticles may need to be further encapsulated in a scaffold or depot to prolong their release of drug.

Healthy Media - Enhancing Healthy Living Education in PreK Students with EdTech Media.

Emilio Puente Barrios1; 1Department of Health and Human Performance, UTRGV

Background: Young children today learn in diverse environments, including home, school, and through digital media platforms such as apps, videos, games, and songs. With the increase in screen time due to Covid-19 restrictions, digital media has become a valuable resource for remote learning, offering fun and educational interactions. However, the impact of incorporating educational technology or EdTech digital media applications into health education curricula on the performance of PK 4 students in understanding and adopting healthy living concepts remains understudied. By exploring the effectiveness of design elements and strategic approaches this research aims to evaluate newer technology-driven media in enhancing student performance and healthy living education for young learners.
Methods: The study compared two cohorts of PK-4 students from two different school districts across 42 schools, randomly divided into intervention and control groups. In the 2018-2019 school year the PK-4 students received the paper-bound Bienestar/Neema Coordinated School Health Program (BN CSHP) and in the 2022-2023 school year they received the EdTech BN CSHP. The EdTech consisted of visually engaging media, such as animated videos and interactive digital activities. Student performance was assessed using a 13-item health knowledge test, shown to be valid and reliable. Items consisted of healthy living concepts, such as identifying fruits, and recognizing healthy food choices and physical activities using images. A panel analysis nested in the schools with treatment as fixed factors was conducted, and Item Response Theory (IRT) with a 2-parameter model (difficulty and discrimination) was used to measure the students' skills in answering the questionnaires.
Results: The study included 1182 students from cohort 2018 and 1043 students from cohort 2022, with 51% females, and mean age 4.7 (SD 0.3). There were no significant differences of covariates among cohorts. The panel analysis revealed a multiplicative interaction between visits and intervention for both cohorts (p=0.001). Unadjusted analysis showed HKT score increase on 2.7% for the 2018 cohort and 4.6% increase for the 2022 cohort. The IRT model supported effectiveness of the media intervention for both cohorts, resulting in a 0.17 deviations increase after six months of intervention.
Conclusions: The study's conclusions provide valuable insights into the effectiveness of utilizing different forms of media in engaging and educating pre-school students about healthy living. By examining the impact of different media form and determining which learning method is more effective, health literacy of students at an early age can be better addressed. These findings will contribute to the development of evidence-based strategies for designing educational interventions that effectively promote healthy habits among young learners. This research aims to convey practical applications of the study's findings, highlighting the importance of engaging and visually appealing educational materials for enhancing student performance and engagement.
Partners: The I2PBH initiative coordinates these experiential training opportunities with three (3) Area Health Education Center (AHEC) Primary Care Clinics (PCC) and one (1) mobile clinic to promote community-based partnerships in four rural counties in South Texas. Looking Ahead By the year 2025, the I2PBH initiative will have:
• 96 students complete three PCBH courses and an associated internship and practicum experience in a UTRGV rural AHEC or Mobile Clinic PCC.
• Implemented PCBH-focused education and clinical supervision for BHWET stipend recipients and faculty facilitators from different disciplines.
• Collaborated with community partners to increase access for behavioral health services and connect trainees with potential employment opportunities.
• Integrated technology to facilitate learning/teaching and enhance community reach and impact

Primary Care Behavioral Health Partnerships Advancing & Transforming Health Sciences (PCBH PATHS)

Diaz-Rios K., Deepu G., Arellano III S., Hernandez M., Ruiz M.

Purpose: Primary Care Behavioral Health Partnerships Advancing & Transforming Health Sciences (PCBH PATHS) is a workforce development pipeline project aimed at permanently augmenting UTRGV's institutional capacity to address shortage of an Integrated Behavioral Health (IBH) competent workforce locally, regionally and nationally. Our initiative, aligned with UTRGV strategic priorities and key initiatives, will integrate basic(model specific strategy and operational elements), mid-level (role identity and profession specific behavioral competencies specific to each health profession), and advanced (behavioral medicine clinical skills) applications of the evidence based PCBH model of delivery. A PCBH focused delivery system (clinical and educational), in which primary care providers (PCPs) and behavioral health consultants (BHCs) are trained to provide routine, population-based, biopsychosocial care in the Rio Grande Valley (RGV) can increase parity for mental health access, minimize toxic effects of culturally bound stigma, reduce fragmentation of physical-mental health and stave off the effect of an expanding opioid use disorder (OUD) crisis.
Description : The PCBH PATHS initiative is designed to impact 2,004 clinician learners, with 1,106 PCP trainees (FM, IM, Ob/Gyn FNP, PA, MS), 818 mental health provider (MHP) trainees, and 80 PCP/MHP practitioners in the RGV by 2024. Over the past four years, the evidence-based PCBH model has been implemented in FM and Ob/Gyn Residency programs clinically, to increase access to whole-health focused services for patients, and educationally, to increase physician competencies in PCBH to provide high quality whole-person care consistently. This initiative strengthens our existing commitment to expand the PCBH model across University of Texas Health Rio Grande Valley (UT Health RGV) primary and specialty care clinics to address physical and behavioral health disparities (e.g., diabetes, depression, pain management, opioid, and substance use issues) for a predominantly Latino population along the US-MX border.

Partners: In partnership with all primary care provider training programs at UTRGV (PA, NP, Residents) and mental health provider training programs led by the Department of Counseling, this collaborative project will use institutional expertise and infrastructure capacity to integrate PCBH model focused education to augment existing training programs.
Looking Ahead By year 2024, PCBH PATHS will impact 2004 clinician learners, demonstrated by:
• Ten programs aligning PCBH PATHS to existing courses for a PCBH certificate
• PCP trainee programs adopting policies to require Medication Assisted Treatment (MAT)-Waiver for graduation
• An educational research database for tracking % of PCP/MHP graduates completing the PCBH PATHS certificate; % of PCBH PATHS grads practicing in a Medically Underserved Community (MUC); % of grads practicing MAT; % of PCBH PATHS grads intending to practice / champion PCBH
• 6 PCBH sustained clinics: Demonstrated cost-savings through prospective, case-control design
• Sustaining wellness committees and practices as part of PCBH PATHS implementation
• 8 durable, HRSA-priority deliverables, for replicating PCBH PATHS at other institutions

Human iPSC derived neural stem cells: An in-vitro model to investigate snake venom neurotoxicity

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Background: The World Health Organization (WHO) has recognized snakebite as a neglected tropical disease that affects nearly 2.7 million people per year and causes both long-termmorbidity and substantial mortality. The multifunctionality of snake venom and the diversity of cellular responses to snake venom insult are well recognized. However, the neurotoxic effects of snake venom insult on the human nervous system are not yet fully understood. Therefore, a robust cell model that is easily reproducible and scalable to a larger sample size is required to aid the discovery of molecular mechanisms involved in the neurobiology of snake envenomation in humans. The Mojave rattlesnake (Crotalus scutulatus scutulatus) is a highly venomous pit viper commonly found in the arid regions of southeastern California, southern Nevada, southwestern Arizona, the southwestern corner of New Mexico, western Texas, and Mexico and is included in the “highest medically important” risk category in the United States and by the WHO. Initial proteomic analyses of the Mojave rattlesnake venom indicate that it is rich in snake venom phospholipases (svPLA2), snake venom metalloproteases (svMP), and snake venom serine proteases (svSP) of which svPLA2 constitutes ~20% of the venom.
Methods: To model the neurotoxic effect of Mojave rattlesnake envenomation, we performed an in-vitro snake venom challenge in human induced pluripotent stem cell (iPSC) derived neural stem cells (NSCs) of four participants of our Mexican American Family Study (MAFS). Wellcharacterized NSCs in in-vitro cultures were exposed to 10 µg/ml Mojave rattlesnake venom for 24 hours and then phenotyped for genome-wide differential gene expression by mRNA sequencing (mRNAseq).
Results: Transcriptomic analysis of the pre- (vehicle-treated) and post-venom challenged NSCs identified 373 genes that were significantly (moderated t statistics p-value ≤ 0.05 and FoldChange-absolute ≥ 2.0) differentially expressed (DE). The 232 genes that were up-regulated challenge showed significant enrichment in dicarboxylic acid metabolism, cellular-modified amino acid, and nonribosomal peptide biosynthetic processes, serine and cysteine metabolism, folic acid metabolism, cell redox homeostasis, and glutathione biosynthetic processes, ER stress associated pathways including apoptosis, tau-protein kinase activity, endothelial response to laminar fluid shear stress, response to arsenic-containing substances Gene Ontology (GO) terms. 141 genes that were significantly down-regulated post-venom challenge suggest significant inhibition of synaptic transmission and signaling pathways, neurotransmitter uptake and transport, locomotory-, startle- and auditory stimulus responses, catecholamine metabolism, and axoneme and microtubule assembly. The svPLA2, svMP, and svSP in the snake venom recruit prey analogs of similar activity including arachidonic acid, intracellular calcium, cytokines, and bioactive peptides to induce cytotoxic injury. Prey paralysis, though the precise mechanism is not fully understood, likely results from a selfamplifying cycle of endogenous PLA2 activation, arachidonic acid production, increases in intracellular Ca2+, deactivation of the nicotinic receptor, and synaptic suppression.
Conclusions: Our results show that the NSC response to Mojave rattlesnake venom recapitulates the neurocellular response to svPLA2, svMP, and svSP and iPSC-derived NSCs that are easily scalable to a larger sample size, is a relevant cell model to investigate the molecular mechanisms of snake venom neurotoxicity.

Interdisciplinary Integrated Primary and Behavioral Healthcare (I2PBH) Initiative
Ronnau J., Deepu G., Hernandez M., Arellano III S., Ruiz M.

Purpose: The Interdisciplinary Integrated Primary and Behavioral Healthcare (I2PBH) Initiative will train University of Texas Rio Grande Valley (UTRGV) mental health graduates to deliver high quality, evidence-based Integrated Behavioral Health (IBH) services in the Rio Grande Valley (RGV) – a high-need, high-demand, medically underserved Hispanic region along the US-Mexico border. Specifically, the I2PBH initiative will train 24 UTRGV mental health graduates annually to deliver high-quality IBH clinical services through the evidence based Primary Care Behavioral Health (PCBH) model. With a training emphasis on basic/advanced theory and clinical skills in the PCBH model, students will serve as Behavioral Health Consultants (BHC) to meet practicum/internship requirements while working alongside healthcare professionals in a primary care setting. The I2PBH initiative increases the presence of culturally concordant, primary care competent BHCs on the front lines of four rural clinics to function as primary care providers (PCP) extenders for all behaviorally informed needs of patients, increasing access and delivering whole-person care.
Description: The I2PBH initiative will train 6 graduate students each year from 4 mental health disciplines in basic and advanced theory and clinical skills through the evidence based PCBH model. As BHCs, these Behavioral Health Workforce Education and Training (BHWET) stipend recipients in Social Work (SW), Clinical Mental Health Counseling (CMHC), Rehabilitation Counseling (RC), and Psychology (PSY) will work alongside healthcare providers and other health profession trainees in three (3) Area Health Education Center (AHEC) Primary Care Clinics (PCC) and one (1) mobile clinic, located in four rural counties of South Texas. Academic training for PCBH-focused courses and PCBH oriented advanced clinical supervision will be delivered through in-person classes, role-playing, digitally enhanced training using Mixed-Reality Simulation (MRS), and asynchronous distance learning via virtual platforms (e.g., Blackboard, Zoom). All BHWET stipend recipients will complete the trauma-informed, culturally adaptive PCBH-focused courses –Foundations of IBH; Clinical Skills for the BHC; and Latinx Health Issues in IBH. Based on a discipline-agnostic approach, this teaches PCBH specific competencies while also providing concurrent, primary-care focused clinical experiences, resulting in a behavior health workforce that is primary-care ready and trauma-informed.

Relationship between Alcohol Use Disorders and Alzheimer's diseases. A bibliometric Analysis.
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Background: Some of the detrimental effects of heavy alcohol use on brain function are similar to those observed in Alzheimer's disease (AD). Although alcohol use may be a risk factor for AD, it is difficult to study this relationship because of similarities between alcoholic dementia and AD and because standard diagnostic criteria for alcoholic dementia have not yet been developed. Similar biological mechanisms may be involved in the effects of AD and alcohol abuse on the brain. Epidemiologic studies have investigated the relationship between alcohol use and AD but have not provided strong evidence to suggest that alcohol use influences the risk of developing AD.
Methods: Further research is needed before the effect of alcohol use on AD is understood fully. In the last decades, academic knowledge has been expanding exponentially. In this context, critical literature review can help overcome these limitations and help with several aspects of the research process, establishing a context and delimiting the research problem; seeking theoretical support; rationalizing the problem and pointing to new lines of inquiry; distinguishing what has been done from what needs to be done. On the other hand, bibliometric analysis is a popular and rigorous method for exploring and analyzing large volumes of scientific data. It enables us to unpack the evolutionary nuances of a specific field while shedding light on the emerging areas in that field.
Results: In this study, based on a scientific review of 768 data registers on topic of Alcohol Use Disorders and Alzheimer's disease from PubMed and Web of Science, we used VOS viewer software to systematically and objectively describe the context of Alcohol Use Disorders and Alzheimer's disease Research to determine the knowledge evolution structure between articles and investigate research trends.
Conclusions: Compared with simply reviewing existing articles, the major contribution in this study is a comprehensive review of yearly scientific output, journals, countries, institutions, contributors, highly cited papers, and keywords for health literacy research in the field of Alcohol Use Disorders and Alzheimer's disease. The study also provides valuable guidelines for interested researchers on Alcohol Use Disorders and Alzheimer's disease.

Revitalizing Alzheimer's Community Engagement in the RGV Post-Pandemic: Insights from the First Two Alzheimer's Forums

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Background: The Rio Grande Valley (RGV), with a population predominantly composed of Hispanic/Latinos (93%), faces a higher risk of Alzheimer's Disease (AD) compared to other groups. The COVID19 pandemic has highlighted the lack of education and awareness surrounding AD and related dementias in our community. To address these challenges, we partnered with the Alzheimer's Association to organize the first two Community Forums after the pandemic. Our goal is to raise awareness, provide resources, and support those affected by AD and related conditions in the RGV.
Methods: Through a proactive partnership, our objective was to meet the growing demand for education, resources, and support for individuals impacted by Alzheimer's. We hosted two Alzheimer's Community Forums on May 9th, 2023, at the UTRGV Harlingen Auditorium in Harlingen and May 23rd at UTRGV Salon Cassia in Brownsville. We used the Community Assessment Toolkit as guiding frameworks. These forums served as a dynamic engagement strategy, bringing together healthcare professionals, researchers, and community members to exchange valuable insights and information. With involvement from UTRGV teams, including marketing, we developed impactful marketing resources and invited UTRGV Community Partners to set up informational tables to promote resources for those impacted by dementia.To maximize outreach, we distributed flyers and engaged in conversations with people on the streets. This grassroots approach attracted a significant number of attendees who signed in, allowing us to present crucial information and facilitate discussions. Our Community Partners generously donated door prizes to further incentivize participation and engagement

The Fortify Resilience Initiative

Deepu G., Arellano III S.,Hernandez M., Ruiz M., Eychner T.

Purpose: The Fortify Resilience Initiative focuses on building and sustaining a culture of wellbeing for Residents and Fellows (R/Fs) at The University of Texas Rio Grande Valley (UTRGV) School of Medicine's (SOM) Graduate Medical Education (GME) residency and fellowship programs. In order to address the multitude of threats to physician wellness and to mitigate the silent, but pernicious effects of burnout on these physician learners serving in the RGV, this Initiative from the Office of GME will strengthen existing wellbeing pathways while expanding additional solutions that will work to sustain wellbeing. Utilizing a combination of prevention, promotion, and intervention strategies targeted at the individual, program, and system levels, this initiative increases resilience by addressing existing gaps that only further propagate the spread of risk and vulnerability to the community.
Description: The Fortify Resilience Initiative maintains three key drivers (Access Strategy, Empowerment Initiatives, and System Redesign) that all work to address and enhance components central to wellbeing management. Within the Access Strategy is continuous access to direct online clinical and coaching services, annual opt-out wellness check-ins, monthly live online learning sessions with embedded didactics as well as skill development practical labs. Launch of a Wellbeing Mobile Application (WMA), allowing users to periodically self-assess and receive suggestions to improve self-management as well as the establishment of Program Specific Wellness Committees (PSWC), constitute the Empowerment Initiatives. Consultations with each partnered program's leadership, along with the introduction of a faculty development pathway to train faculty to full competency over current wellbeing methodologies, aim at establishing a presence of institutional expertise and represent the System Redesign driver.
Partners: The Fortify Resilience Initiative at UTRGV is illuminated through a vital partnership with Tend Health (TH). TH is an innovative company specialized in the care and well-being of health professionals, with a history of successful partnerships with GME programs offering mental health and well-being focused services. TH is an essential partner in two of the key drivers – Access Strategy and System Redesign.
Looking Ahead
By year 2024, the Fortify Resilience Initiative seeks to impact 249+ UTRGV R/Fs and clinical faculty, as demonstrated by:
• Graduating all R/Fs with self-management of well-being competencies
• Embedding access strategy services as routine part of UTRGV GME programs
• Integrating technology solutions – WMA – as a core strategy for resilience for GME programs
• Enrolling 100% of new R/Fs as users on the WMA via GME on-boarding each program year
• Sustaining PSWC's across 11+ GME programs with routine use of the WMA
• Establishing a scalable culture of wellbeing strategy for the UTRGV SOM
• Building resilience supporting policies within programs and institution
• Developing a UTRGV Faculty Affairs sustained Master Trainer Faculty Development (MTFD) track to continue delivery of resilience trainings by MTFD scholars

MEDICAL STUDENT CATEGORY

Adipose Stem Cells as an Adjunct to Peripheral Nerve Surgery

Allison Podsednik Gardner

Background: Currently, many different techniques exist for the surgical repair of peripheral nerves. The degree of injury dictates the repair and, depending on the defect or injury of the peripheral nerve, plastic surgeons can perform nerve repairs, grafts, and transfers. All the previously listed techniques are routinely performed in human patients, but a novel addition to these peripheral nerve surgeries involves concomitant fat grafting to the repair site at the time of surgery. Fat grafting provides adipose-derived stem cells (ADSCs) to the injury site. Though fat grafting is performed as an adjunct to some peripheral nerve surgeries, there is no clear evidence as to which procedures have improved outcomes resultant from concomitant fat grafting. This review explores the evidence presented in various animal studies regarding outcomes of fat grafting at the time of various types of peripheral nerve surgery.
Methods: A literature search was performed with key words including “fat grafting,” “adipose derived stem cells,” “animal research,” and “peripheral nerve surgery.” An additional requirement for the studies was that they evaluated functional outcomes. Participant number and outcome evaluation of animal nerve repair surgeries, nerve grafting studies, tissue engineered nerve graft studies, and nerve transfer studies were inserted into tables for study comparison.
Results: Animal experiments demonstrate that various types of peripheral nerve surgeries have the potential to benefit from the addition of ADSCs during surgery. ADSCs have proven beneficial for nerve regeneration on multiple levels, including by secreting growth factors and by morphing into Schwann-like cells, which can modulate genes in a way that facilitates peripheral nerve healing. Current literature on animal peripheral nerve surgery with an addition of fat grafting includes studies on nerve repair. nerve grafting, nerve grafting with tissue engineered nerve grafts, and nerve transfers.
Conclusion: Very few of the existing studies evaluate the functional outcomes of adipose derived stem cell addition to peripheral nerve studies, as seen in this review. One of the reasons that animal studies are so useful is due to their ability to correlate histological and functional outcomes, which is not ethical in many cases in human studies. Future studies should consider evaluating functional outcomes so that meaningful applications could be more easily extracted in relation to physiological effects.

Avoiding a Perfect Storm: Delving into the Consequences of a Complex case of Superimposed Cellulitis after a Herpes Zoster infection

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Introduction: Cellulitis is an acute bacterial infection causing inflammation affecting the deep dermis layer as well as the surrounding subcutaneous tissue that does not contain an abscess. In this case study we aim to describe the clinical presentation of a middle aged Hispanic woman who developed a superimposed cellulitis infection following a flare-up of a zoster infection. Herpes Zoster is typically considered a typically benign infection but in immunocompromised individuals severe complications of the infection include bacterial superinfections, coagulopathies including disseminated intravascular coagulation, and central nervous system manifestations including encephalopathy with long term detrimental outcomes [1]. Management of Herpes Zoster Virus complications in immunocompromised patients has been a historically challenging task as there
is limited reference data because of the unique presentation of each patient and their varying levels of immunocompetence adds an extra layer of variability to each patient’s presentation. Our patient’s past medical history of Polycystic Ovarian Syndrome, uncontrolled diabetes mellitus type 2, and hypertension created an immunocompromised state predisposing her to an acute cellulitis infection following her most recent flare-up of shingles rash. Social determinants that contributed to her disease progression were her lack of healthcare access including regular check-ups for glucose monitoring and suboptimal treatment for her chronic medical conditions [2]. This is a recurrent theme in patients in a similar situation located in the US-Mexico border where social determinants exponentially affect the healthcare outcomes of patients and often lead to severe outcomes that increase morbidity and mortality in this highly vulnerable population [3].
Case Description: Our patient is a 37-year-old Hispanic woman who presented to the clinic complaining of a rash in her left lower abdominal region, as well as systemic symptoms including a fever and an episode of chills. Her past medical history includes Polycystic Ovarian Syndrome (PCOS), Diabetes Mellitus type 2, hypertension, and hyperlipidemia. She has a history of a Zoster virus rash that flared-up 2 weeks ago that had not resolved and stated that it had progressively worsened and became more erythematous leading to increased pruritus. At the time of her flare-up she was treated with Acyclovir 800 mg Q5h which she said provided minimal resolution of her symptoms. Physical examination revealed a wound covered with a bullous pustular lesion with a warm erythematous portion in the right flank. Her vital signs revealed a low grade fever of 100.8 F and a tachycardic state with a pulse 112 bpm. Further evaluation included a point of care ultrasound (POCUS) to rule out a potential abscess, results were unremarkable . Her most recent laboratory values included a CBC significant for a WBC of 19 and a hemoglobin A1c of 13.6. Patient was treated with an antibiotic regimen including topical clindamycin and 1 dose of intramuscular injection of Ceftriaxone 750 mg. After the administration of the antibiotics available to us at the outpatient center, the patient was told to check in at the emergency room

for closer monitoring and possible continuation of IV antibiotic treatment. The patient declined and decided she was going to monitor the symptoms herself because she stated she couldn't cover the costs of a prolonged hospital stay. She was then advised to report to the emergency room if she noticed worsening symptoms including crackling or crepitation as well as worsening systemic symptoms such as high fevers, chills, or severe abdominal pain. She was seen at the clinic 1 week later to follow up on the progression of the rash and symptom resolution following the completion of her antibiotic regimen. Fig. 1 depicts the localization of the rash when the patient arrived at clinic Day 1. Following antibiotic treatment and appropriate symptomatic monitoring after 1 week, Fig. 2 reveals resolution and subsequent abdominal scarring. During the patient's follow up, we discussed the importance of continuation of care for her chronic medical conditions to prevent further complications in the future including her predisposition to CAD and susceptibility to infections, her hyperglycemic monitoring, and compliance to treatment Regimen.
Discussion: This case highlights the unique clinical presentation of cellulitis post-shingles infection in a middle-aged Hispanic woman with multiple unmanaged chronic conditions. The summation of which led to a weakened immune response and superimposed cellulitis infection. This case highlights the potential for superimposed bacterial infections to occur on compromised skin. This case emphasizes the importance of prompt intervention and appropriate health care maintenance to prevent further complications. Limited access to healthcare services can hinder disease management and increase the risk of complications in underserved populations [2] . This case underscores the significance of addressing healthcare disparities and improving access to comprehensive healthcare resources, particularly for individuals with multiple unmanaged chronic conditions, in order to mitigate risk of disease progression and enhance overall patient outcomes.
Conclusion: This case illustrates the impact of social determinants on disease progression in a middle-aged Hispanic woman with limited healthcare access and under-managed chronic conditions who developed superimposed cellulitis following HZV infection. The conclusion emphasizes the need for timely intervention, improved healthcare resources, and addressing healthcare disparities to mitigate complications which ultimately leads to improved patient outcomes, especially in underserved populations with limited resources.
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Axial Fat Relationship with Development of Pathologic Metabolic Disease
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Background: Increasing BMI is related to development of pathologic metabolic syndromes including insulin resistance, type 2 diabetes mellitus, and non-alcoholic fatty liver disease. The present study aims to provide a review on the current data in literature assessing the relationship between axial fat and development of metabolic disease states while also exploring the long-term effects of liposuction.
Methods: We conducted a literature search using OVID, PubMed, Google Scholar, and Plastic and Reconstructive Surgery using search terms including "axial fat" and "truncal fat" in combination with disease states of interest including "insulin resistance," "diabetes," and "non-alcoholic fatty liver disease."
Results: Literature demonstrates that adipose tissue distribution has an impact on systemic metabolism. There is a relationship between fat distribution with higher concentrations in the subcutaneous abdominal region is related to type 2 diabetes mellitus. Additionally, both subcutaneous and visceral adipose tissues have an association with insulin resistance. Finally, the incidence of abdominal obesity is shown to correlate to the degree of non-alcoholic fatty liver disease.
Conclusion: There is sufficient evidence that there is a relationship between axial fat and development of metabolic disease. We would like to base an future study on the information we discovered in regard to redistributing axial fat to other areas of the body for augmentation (i.e. breasts during breast reconstruction, glutes, face) and evaluate change in the person's baseline metabolic disease state with the concomitant reduction of axial fat, but not total body fat.

Case Report: Kidney Transplant Pyelonephritis

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Background: Individuals with end-stage kidney disease (ESKD), and especially those who have received kidney transplants, are at an increased risk of developing urinary tract infection (UTI). UTI, especially recurrent UTI, is a common problem occurring in >75% of kidney transplant (KTX) recipients. Progression of infection can have significant consequences on the functioning of the transplanted kidney. It may be challenging to distinguish complicated UTI from acute or chronic rejection when patients present with fever and abdominal pain at the transplanted location. In this case study, we present the clinical scenario of a patient with a history of hypertension and ESKD who has one functioning transplanted kidney and went on to develop a UTI that progressed to pyelonephritis.
Case presentation: A female patient, 55 years old, with a medical history including appendectomy, hypertension (HTN), recurrent urinary tract infections (UTI), and end-stage kidney disease (ESKD) following a kidney transplant in 2017, is currently taking post-transplant anti-rejection medications, namely Tacrolimus and Mycophenolate. She visited the emergency department seeking evaluation for pain in the lower right abdomen that radiates to the back. She also reported intermittent fevers, chills, and increased urinary frequency. During the physical examination, tenderness was noted in the lower right quadrant. Laboratory tests revealed leukocytosis, a slightly elevated Creatinine level of 1.8 mg/dl, and the presence of numerous bacteria in the urine. A CT scan of the abdomen showed atrophic native kidneys and a transplanted kidney in the lower right quadrant without hydronephrosis.
In the previous month, the patient had been diagnosed with a complicated UTI caused by pan-sensitive Escherichia coli (E. Coli). She received three days of intravenous Cefepime and was discharged with Cephalexin. Since her kidney transplant six years ago, she has been consistently taking Tacrolimus and Mycophenolate to prevent rejection of the transplanted organ. Her blood pressure has been well controlled, and chronic allograft rejection is considered less likely as the cause of her symptoms. Considering her history of recurrent UTIs and previous use of a fourth-generation cephalosporin, Zosyn (Piperacillin-Tazobactam) is a suitable choice of antibiotic for the current infection. This is particularly relevant as the urine culture results showed that the E. Coli strain is resistant to multiple drugs but susceptible to Zosyn. The patient responded positively to the antibiotic therapy and was discharged with plans for ambulatory infusion follow-up using intravenous Zosyn at home.
Conclusion: Escherichia coli (E. coli) continues to be a prevalent pathogen responsible for urinary tract infections (UTIs), both in individuals without underlying health conditions and in patients who have undergone kidney transplantation. When dealing with suspected complicated UTIs, it is crucial to rule out the possibility of acute or chronic renal allograft rejection. In addition, it is important to gather information about the patient's healthcare settings, such as nursing homes, as this can aid in guiding antibiotic therapy. Utilizing broad-spectrum antimicrobials may be necessary while awaiting the results of urine culture and sensitivity testing to ensure appropriate treatment.

Cellular and Molecular Mechanisms of Neurodegeneration in Early-Stage Diabetic Retinopathy

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Background: Diabetic retinopathy (DR) remains the leading cause of blindness in working age Americans. There has yet to be any effective treatment to prevent the onset of the condition, only to treat late-stage disease. Research on early signs of disease have shown that changes in neural layers of the retina are the earliest signs of disease, preceding the vascular changes that currently define DR. This has sparked interest in the pathogenesis of the neurodegeneration involved in DR. This review explains the current understanding of the cellular and molecular mechanisms of neuronal degeneration in DR, as well as the potential pharmacological interventions that are being researched for each mechanism.
Methods: A literature review was performed to look at each major cellular and molecular pathway that has been defined and associated with DR-related neurodegeneration, the most current research regarding pharmacological interventions, and the relationship between the retinal neural cells and the microvasculature in diabetes to promote neurodegeneration. Articles have been sourced from either PubMed or Up-To-Date.
Results: The polyol, PKC, hexosamine, and AGEs pathways have been shown to be upregulated in hyperglycemia. The polyol pathway descreases NADPH, which is necessary for glutathione regeneration. Neural cells become unable to tolerate ROS. Fructose and sorbitol accumulate in cells, causing swelling. Epalrestat, FDA approved for diabetic neuropathy to target aldose reductase, has potential for DR. The PKC and RAGEs pathways promotes NADPH oxidase which produces ROS. PKC-□ inhibitor Ruboxistaurin has been in clinical trials to treat Diabetic Retinopathy. The hexosamine pathway intermediate glucosamine is toxic to mitochondria and promotes peroxide production. Benfotiamine, a B1 derivative, may inhibit AGEs, PKC, and hexosamine pathways. DM causesan imbalance of the pro-NGF/NGF ratio, promoting apoptosis. NGF eye drops show promise at treating DME by normalizing ratio. The BDNF ratio is also affected the same way. Constant supplementation of BDNF inhibits photoreceptor death, however routine injections are not effective.Elevated TNF-□ is seen in retinal tissue one week after DM onset, stimulating extrinsic apoptosis. Etanercept, TNF-□□ inhibitor, appears to slow progression of DR. Hyperglycemia downregulates PI3K/Akt pathway, used for neuronal survival. Insulin promotes this pathway which protects from apoptosis, yet simultaneously promotes apoptosis. Muller cells and microglia are activated by hyperglycemia and release inflammatory mediators and cause glutamate excitotoxcity. Muller cell activation can be seen 1.5 months after DM onset, transient BBB breakdown within 6 weeks, and increased glial reactivity. Tau regulation is mediated by astrocytes. Abnormal tau causes astrocyte dysfunction and leads to neuron death.Nitric Oxide gets inactivated by ROS forming peroyxnitrite and creating a neurotoxic environment. VEGF promotes neuron survival at low levels, but apoptosis by degradation of BDNF and GNDF at high levels. Elevated ROS promotes VEGF and inhibits its protective effects.

Conclusion: Several mechanisms for neurodegeneration preceding diabetic retinal vasculopathy have been described, both cellular and molecular. Many studies detail the potential for neurodegenerative pathway to lead to retinal vasculopathy. Continued research on which mechanisms predominate is necessary to develop effective treatments to prevent the onset of DR.

Choroid plexus morphology in substance abuse: a systematic review

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Background**:** The choroid plexus (CP), a highly vascularized organ that lines the ventricles of the brain, serves several important functions that maintain homeostasis of the cerebrospinal fluid (CSF) surrounding the brain and protects the brain from harm by acting as part of the blood-cerebrospinal fluid barrier. Dysfunction in CP morphology and function has recently been associated with various conditions such as stroke, aging, neoplasms, hydrocephalus, Alzheimer's disease, depression, and psychosis. This systematic review explores the morphological changes in the CP associated with substance abuse, which poses a significant problem worldwide.
Methods: A comprehensive literature search was performed to find relevant articles using PubMed, Web of Science, MEDLINE, and Google Scholar. Commonly abused substances such as alcohol, cocaine, cannabis, methamphetamine/amphetamine, opioids, hallucinogens, tobacco/nicotine were searched, however, only studies studying CP morphological changes from alcohol, cocaine, methamphetamine, tobacco/nicotine, and opioids (morphine) were found. Articles were selected based on whether CP morphology in the use of illicit substances was assessed using imaging techniques such as magnetic resonance imaging, computed tomography, ultrasound, light microscopy, and transmission electron microscopy. Studies featuring animals or the effects of substance use in pregnant mothers and their embryos or fetuses were included.
Results: The results showcase morphological changes of the CP that may be observed in the context of the previously mentioned substances. Alcohol consumption during pregnancy was associated with abnormalities in CP epithelium. Studies reported CP hyperplasia or agenesis, increased lateral ventricle volume, decreased glycogen content, and enlarged intercellular spaces. In rats, ultrastructural changes including dilated intercellular spaces, disrupted mitochondria, aggregation of primary and secondary lysosomes, and vacuoles within the cytoplasm were observed. Cocaine use was found to potentially induce CP damage. In rats, vacuolization, necrosis, and lesions CP blood vessels were discovered. Human maternal cocaine use displayed cases of CP cysts across different studies, but a direct correlation could not be established. Methamphetamine administration in rats resulted in increased CP volume, destroyed nuclei, and elevated capillary quantity. Oral morphine administered to rats led to dysfunctional synthesis and secretion of CSF, resulting in decreased cavity surface area and increased CP surface area. Maternal smoking was found to have a significant impact on the CP of the fourth ventricle in fetuses and infants who were victims of sudden death syndromes.
Conclusion: These findings highlight the vulnerability of the CP to substance use and its potential impact on CSF production, CSF homeostasis, and brain development. Definitive conclusions on the effects of substance use on the CP were difficult to establish due to the presence of confounding variables in many studies. Understanding these effects may provide insight into pathological mechanisms associated with substance use and contribute to the development of targeted treatments and prevention. Because this is an understudied topic, further research is necessary to study the complex interaction between substance abuse and the CP, considering confounding variables and an emphasis on non-invasive imaging techniques to translate research to adult humans.

Clinical Management of Larsen Syndrome in Inpatient Rehabilitation: A Case Report

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Key Words: Larsen Syndrome, Inpatient Rehabilitation, Pain Management, Filamin 1, Osteochondrodysplasia

Background: Larsen Syndrome is a rare osteochondrodysplasic disorder associated with Filamin 1 (FLN) gene mutations and clinically presents with frequent large joint dislocations, osseous disturbances, and craniofacial abnormalities. To date, no studies have assessed the medical and rehabilitative management of an individual living with Larsen Syndrome in an inpatient rehabilitation care setting.
Case Presentation: A 30 year-old biological female presented to the emergency department after developing worsening right-sided low back pain while bending forward. The patient's past medical and surgical history was significant for Larsen Syndrome complicated by chronic hip, knee, and back pain, Celiac disease, major depressive disorder, post-traumatic stress disorder, obstructive sleep apnea, gastroesophageal reflux disease, cholecystectomy, and multiple falls. Radiological imaging uncovered cervical spinal cord instability with multiple vertebral abnormalities, of which were managed non-surgically via a cervical stabilization orthosis and mobility precautions. Throughout the 13-day course of care, the patient's pain and functional mobility
decline were managed with pharmaceutical, rehabilitative, psychological, and recreational interventions. Upon discharge, the patient's pain had improved from 7/10 to 0/10 on the Numerical Pain Rating Scale and Functional Independence Measure Motor subset scores improved from 55 to 75.
Discussion: Primary goals of inpatient rehabilitation focused upon pain management and progressive return toward the patient's prior level of function to promote a safe discharge to outpatient therapies and home-based activities. Physical, occupational, speech, and recreational therapies were a crucial adjunct to the management of the patient's chief complaints, including addressing functional mobility impairments, activities of daily living safety, supported locomotion, and spinal protection. Spinal instability is considered the most emergent pathology in patients living with Larsen Syndrome, in light of the neurological consequences that may

follow mechanical injury during spinal loading or high-velocity movements. Cervical spinal instability without thecal saccompression was uncovered during rehabilitation, necessitating cervical bracing and non-operative measures to mitigate progression of cervical myelopathy. Although non-operative management of spinal instability was pursed, the patient ultimately improved in global pain ratings and Functional Independence Measure scores, indicating higher likelihood of meaningful return to the desired level of function.
Conclusions: Larsen syndrome is a debilitating, yet rarely encountered condition that requires the specialized management of a multi-disciplinary medical and rehabilitative team. FLN 1 gene mutations are suspected to be underdiagnosed and will continue to present with a variety of unique phenotypic impairments requiring treatment in the inpatient rehabilitation setting. We present this case of Larsen Syndrome to highlight the importance of diagnostic familiarity and approaches to rehabilitation of individuals living with FLN 1-associated conditions.

Cost Effective Treatment Options for Uninsured Patients with Diabetes
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Background: Approximately 37.3 million people in the United States have diabetes, accounting for 14.7% of the US population. Additionally, an estimated 2 million adults with diabetes have no health insurance coverage, which can contribute to chronic co-morbidities and increase all-cause mortality. Given the economic challenges these uninsured patients may face, it is important for healthcare providers to understand the cost-effective treatment options available to improve long-term outcomes. Therefore, this abstract aims to provide a cost-effective treatment algorithm for uninsured patients with diabetes.
Case Presentation: Our patient was a 47-year-old uninsured Hispanic female with uncontrolled type 2 diabetes mellitus. The patient's self-reported daily blood sugar levels ranged from 140-200 mg/dL, and her most recent hemoglobin A1c level was 8.6%, which she attributed to a sedentary lifestyle, poor diet, and the inability to afford her prescription medications due to a lack of insurance. Given her financial constraints, a cost-effective medical optimization strategy was implemented. This included patient education as well as prescribing more affordable medications with the goal of improving her glycemic control and reducing long-term complications related to diabetes.
Conclusion: Management of diabetes in the uninsured or financially hard-shipped patient population can be difficult but is feasible through cost-saving coupons and discount pharmacies. Oral treatment options typically include 1st and 2nd-generation sulfonylureas, meglitinides, biguanides, and thiazolidinediones. Insulin, as part of the pharmacologic treatment, is often saved until oral low cost options fail to aid in managing the disease but also have cost-effective options. However, while cost-saving measures such as coupons and online pharmacies provide a viable solution for uninsured diabetic patients, it is important to note these treatment options may not be as effective as the established gold-standard treatments (DPP-4 inhibitors, SGLT2 inhibitors, GLP-1 agonists, rapid and basal insulins) as per the American Diabetes Association 2023 Standards of Care. Despite this limitation, these cost-effective treatment options can still play a significant role in improving blood sugar management and hopefully limit complications associated with long-term uncontrolled diabetes.
Keywords: diabetes mellitus, uninsured, financial hardship, treatment options, cost-effective, Medication.

Description of a New Technique: Utilizing an De-Epithelialized Inferior Mastectomy Skin Flap to Preserve the Nipple-Areolar Complex in Patients with Stage II and III Breast Ptosis
Allison Podsednik Gardner

Background: Breast cancer is the most common malignancy in women aside from nonmelanoma skin cancer. Skin Sparing Mastectomy (SSM) and preservation of the nipple areolar complex (NAC) are increasing in popularity due to improved cosmesis and low rate of tumor recurrence. Relative contraindications to nipple-sparing mastectomies (NSM) include grade II and III breast ptosis, even if oncologically feasible to keep the nipple, due to concerns of vascular compromise. For some women, maintaining their own, natural nipples is an important part of the reconstructive process. This paper describes a technique which is intended to preserve the NAC in those with large breast ptosis by locating NAC on the inferior flap and utilizing de-epithelization.
Methods: We aim to describe a new surgical technique to safely preserve the NAC during breast reconstruction in women with large grade II and III ptosis. In addition, we present data from women at our institution that have undergone the surgical technique as proof of its efficacy. Inclusion criteria was females at DHR who were candidates for NSM, underwent the technique presented in this paper, and were diagnosed with a minimum of grade II breast ptosis.
Results: Patients in the study had a mean age of 49.6 years old and had a BMI of 30.8. In our institution, this operation was performed on 17 patients and 31 breasts with a 83.87% NAC survival rate. NAC partial or full necrosis rate in NSM in unselected patient population is estimated to be between 2-20%. On average the follow up time for the patient population was 19 months with 45 months being the longest follow up time to date.
Conclusion: Utilizing a de-epithelialized inferior mastectomy skin flap to preserve the nipple areolar complex in patients with stage II and III breast ptosis is a safe and reproducible technique of performing nipple sparing mastectomies.

Descriptive Analysis of State and Federal Malpractice Litigation in the United States Related to Neuroendovascular Procedures

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Introduction: Medical malpractice interests the medical community at large. While previous neurosurgical review articles have analyzed malpractice in the context of spinal surgery, few have reviewed malpractice data surrounding neurovascular procedures as a whole. Here we present a retrospective review of characteristics associated with malpractice litigation in cases involving neuroendovascular procedures in the United States.
Methods: Google Scholar Case Law, Casetext and Westlaw legal databases were searched for verdict and settlement reports pertaining to neurovascular procedures from 1984 to 2023. Data were collected regarding type of procedure, patient age and gender, defendant specialty, outcome, award, and alleged cause of malpractice. Search terms included “arteriovenous malformation,” “brain aneurysm,” “aneurysm coiling,” “subarachnoid hemorrhage,” “large vessel occlusion,” “mechanical thrombectomy,” “cerebral angiography,” “carotid angioplasty and stenting,” and “carotid stenosis.” Initial search produced 212 cases, after which exclusion criteria were applied to eliminate duplicates and cases unrelated to neurovascular surgery/diagnoses or malpractice, yielding 27 cases total.
Results: The verdict favored the defendant physician(s) individually or represented by a healthcare entity in 8 of the 27 cases selected for analysis. Of 19 cases with verdicts in favor of the plaintiff, settlement values ranged from $30,000 to $15.65 million. In settlement cases, the most commonly involved procedures included AVM embolization followed by aneurysm coiling. Amongst cases where interventionist was the defendant, the most common specialty was neurointerventional radiology, followed by neurosurgery. Failure to diagnose was the most cited alleged malpractice cause (51.8%) amongst all cases, regardless of verdict.
Conclusions: Neurovascular emergencies are often addressed by a team of medical specialists including endovascular neurosurgeons, interventional neuroradiologists, and interventional neurologists. In this review, malpractice claims related to neurovascular emergencies most likely to result in plaintiff award were related to failure to diagnose, and interventional neuroradiologists appear to be at greater risk for alleged malpractice.

Effect of Third Dose Pfizer/BioNTech Covid-19 and Moderna mRNA Vaccine on IgG Antibody Titers

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Background: With the emergence of severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) variants, there has been increasing concern for another COVID-19 crisis. In response, the Centers for Disease Control and Prevention (CDC) authorized the third dose of the Pfizer-BioNTech (BNT162b2) vaccine to enhance protection against the SARS-CoV-2 virus. The purpose of our study was to investigate the impact of administering the third dose of the Pfizer/BioNTech COVID-19 vaccine on the incidence and severity of SARS-CoV-2 infections.
Methods: We enrolled 189 participants, including healthcare workers, adults aged 65 years or older, and medically immunocompromised patients in the Rio Grande Valley. Blood samples were collected from participants at baseline, week 2, week 12, and week 24 after administering the third dose of the vaccine. These blood samples were tested for semi-quantitative anti-SARS-CoV-2 immunoglobulin G (IgG) titers. We used linear regression and various statistical tests to analyze the data.
Results: The results demonstrated that the administration of the third dose of the Pfizer-BioNTech (BNT162b2) vaccine led to sustained elevation of anti-SARS-CoV-2 IgG antibodies for the entire 24-week study duration. IgG antibody levels were highest at week two, gradually decreasing by week 12 and week 24, with statistically significant differences between IgG antibody titers for each collection date. The average antibody titers at week 2, week 12, and week 24 were 293.35, 143.91, and 127.04 AU/ml, respectively.
Conclusions: The study's findings suggest that the third dose of the Pfizer-BioNTech (BNT162b2) vaccine effectively induces an immunological response, with sustained elevation of IgG antibodies for up to 24 weeks. To maintain continuous protection against the SARS-CoV-2 virus, subsequent booster shots may be necessary over time. Additionally, there was no significant difference in immunity provided between the Pfizer and Moderna vaccines post-vaccination. Antibody titers are a measurable way to give us an idea about functional immunity but there are more factors that determine how a person responds to a virus like SARS-CoV-2.

Exacerbation of Acute Angle Closure Glaucoma Symptoms Following SSRI Use

Authors: Authors: Aldridge, E1, Campos, P1, Arab1, S, Selva, S1, Bialaszewski, R1, Chang MD, C1
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Introduction: General Anxiety Disorder (GAD) is a relatively common disorder in the United States, which affects 6.8 million Americans. Selective Serotonin Reuptake Inhibitors (SSRIs) and Serotonin Norepinephrine Reuptake Inhibitors (SNRIs) are considered the mainstay of pharmacologic treatment of GAD, along with behavioral modifications, such as Cognitive Behavioral Therapy (CBT). However, these medications may cause harmful side effects in unique individuals. This abstract will discuss the unusual side effect of acute angle closure glaucoma in a male while being treated for GAD with an SSRI.
Case Presentation: The patient is a 60-year-old male with a history of diabetes mellitus, chronic kidney disease, a right below the knee amputation, and right eye blindness from a prior glaucoma episode who presented with new onset GAD. He complains of insomnia due to his health complications, anxiety, and over thinking. He was prescribed escitalopram, an SSRI, and referred to CBT to treat his symptoms of GAD. After starting the medication, the patient noticed an increase in his glaucoma symptoms in his left eye and the medication was discontinued. This provided relief of his intraocular pain. Patient was switched to mirtazapine 7.5 mg, a tetracyclic antidepressant, with improvement in his anxiety symptoms and no signs of glaucoma.
Discussion: SSRIs continue to be used as the first line therapy for GAD and other psychiatric illnesses because of their treatment efficacy. An article published in 2020 suggested that nearly 37 million Americans are on antidepressants, the majority of which are SSRIs. Some of the common side effects of SSRIs include nausea, dry mouth, headache, insomnia, diarrhea, sexual dysfunction, somnolence, sweating, tremor, and weight change. 10 to 20% of people on SSRI discontinue use due to side effects. Research is unclear of the ophthalmologic complications resulting from SSRI use. Previous studies suggest that there is no link between SSRI use and raising intraocular pressure, and others showed a slight association of cataract development with SSRI use. This research brings to question whether the patient could be trialed on a different SSRI as glaucoma does not appear to be a well-proven class side effect. Further research and case studies should be done to determine if SSRIs can exacerbate symptoms in individuals with prior acute angle closure glaucoma attacks. Due to the prevalence of anxiety, depression, and SSRI use, one must be familiar with both common and rare side effects and classify whether they are class side effects or not.

Exploration of Treatment Options for a Hispanic Patient with Obesity Class III and Multiple Comorbidities

Arab1, S, Aldridge, E1, Campos, P1, Selva, S1, Bialaszewski, R1, Chang MD, C1 ; 1The University of Texas Rio Grande Valley School of Medicine, Edinburg, TX, USA

Introduction: The prevalence of obesity has reached epidemic proportions worldwide, presenting a significant challenge to public health systems and clinicians alike. The CDC published new statistics for the prevalence of obesity in the United States, with numbers reaching 41.9% from 2017-2020.Morbid obesity, indicated by a body mass index (BMI) of 40 kg/m² or higher, is associated with an increased risk of numerous comorbidities, including cardiovascular disease, type 2 diabetes, hypertension, and musculoskeletal disorders. This case report aims to explore the available treatment options for a Hispanic female with Obesity Class III and multiple comorbidities while keeping insurance coverage and population health in mind.
Case Presentation: Our patient is a 63 y/o Hispanic female with multiple comorbidities, including Obesity Class III, Heart Failure with Reduced Ejection Fraction, pacemaker placement, stage 5 chronic kidney disease (CKD) on hemodialysis, and type 2 diabetes mellitus. Patient presented to clinic for hospital follow-up after being started on dialysis for treatment of hyperkalemia. Patient is 5ft 2in and weighs 276 lbs. Current BMI is 50.5 kg/m2. Patient's weight remains largely uncontrolled despite lifestyle modifications. Potential interventions at this time present a myriad of problems and risks. 1. Drug Therapy: GLP-1 receptor agonists were recommended but have not been approved for coverage by insurance yet. Patient is unable to pay out of pocket for treatment. Orlistat therapy poses the potential risk of ESRD exacerbation due to oxalate Nephropathy. 2. Bariatric Surgery: Our patient could benefit from bariatric procedures. However, due to comorbidities, our patient is at significantly higher risk of post-surgical complications, according to ACS NSQIP Surgical Risk Calculator.
Discussion: This patient’s case highlights the challenges of obesity treatment, revealing a complex interplay between obesity and its associated comorbidities. There is a vicious cycle in the pathology of obesity in which complications arising from obesity further hinder the treatment options available. Furthermore, our patients case underscores the alarming prevalence of obesity in the U.S. Hispanic population, with a prevalence of 45.6%, according to the CDC. This case serves as a compelling reminder of the necessity to expand obesity care to ensure early interventions. With proactive treatment of obesity before extensive complications take hold, clinicians can mitigate the burden of obesity on both the patient and the public health system overall.

Fibromyxoid Sarcoma of the Breast: An Atypical Presentation of a Rare Mesenchymal Tumor.

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Background: Low-grade Fibromyxoid Sarcoma (LGFMS) is a rare soft-tissue sarcoma with an incidence rate of 0.18 per million, first introduced into the literature by Harry L. Evans in 1987 [1]. This tumor, of mesenchymal origin, has a predilection for young adults and is most commonly found in the upper and lower extremities of deep soft tissues [1,2,3,4,5]. LGFMS has been described as having multiple variants, oftenpresenting histologically as alternating fibrous and myxoid areas containing bland spindle and stellate cells arranged in a swirling, whorled appearance [6]. The predominant chromosomal abnormality of LGFMS has a FUS-CREB3L2 fusion gene with a t(7; 16)(q33; p11) translocation. While other fusion genes expressed by LGFMS are rare, the second most common variation seen is FUS-CREB3L1, which occurs due to a t(11;16)(p11;p11) chromosomal translocation [1,2]. Evans' original report indicated that although slow-growing, this tumor had a high incidence of recurrence with a tendency to metastasize [7]. This insidious nature was highlighted in a 2011 study that showed after a mean follow-up of 14 years, 50% of the patients developed metastasis, and 42% died of the disease [8]. These prognostic factors associated with LGFMS make early detection and definitive management essential in reducing morbidity and mortality in this patient population [9]. This case study aims to highlight the presentation of primary LGFMS in a unique anatomical location within a demographic not commonly affected by this disease.

Case presentation: A 28-year-old Hispanic female presented to the clinic for evaluation of a slow-growing mass present in the left upper chest for the past four years. Prior to arriving at the clinic, the patient received a diagnostic ultrasound that displayed a 1.8 x 1.5 x 1 cm solid mass in the upper chest. The patient stated that although the mass had not grown significantly, and she was overall asymptomatic, mild discomfort was present on direct palpation of the involved tissue. The patient denied any significant past medical history, family history, recent trauma, or other known risk factors, thus additional recommendations were made for an excisional biopsy. Subsequent histopathology of the mass demonstrated a soft tissue sarcoma positive for MUC-4. In addition to the biopsy findings seen in this mass, as well as the Federation of Cancer Centers
Sarcoma Group (FNCLCC) grading system providing our patient's tumor with a total score of 2 for parameters that determine a tumor's grade, a diagnosis strongly favoring a LGFMS was made.

Conclusions: LGFMS is a rare and insidious soft-tissue sarcoma with a high incidence of recurrence and metastasis. Its rarity and appearance make it challenging to diagnose and manage effectively. However, histologic examination and FISH can aid in diagnostic accuracy. This entails identifying the alternating fibrous and myxoid areas containing bland spindle and stellate cells arranged in a swirling, whorled appearance and the FUS-CREB3L2 fusion gene with a t(7;16) (q33;p11) translocation. This case highlights the importance of considering LGFMS in the differential diagnosis of soft-tissue tumors, even in atypical anatomical locations and demographics not commonly affected by this disease. Unfortunately, the rarity
and benign appearance of LGFMS can delay diagnosis, potentially affecting the patient's prognosis. Therefore, early detection and definitive management are crucial to improving outcomes for patients with LGFMS. Further research into the pathogenesis of LGFMS is needed to improve early detection, definitive management, and the prognosis of affected patients.

Imaging manifestations from critically-ill patients during early spread of COVID-19

Guohui Yang; Zewen Liu; Qing Zhang; Wanwei Jiang; Hui Ye; Shi Zuo; Tabitha Abraham; Li Zuo,

Background. The coronavirus disease 2019 (COVID-19) started in December 2019 in Wuhan. This study evaluated clinical characteristics, and imaging manifestations in Ezhou, an early locked down city, about 36 miles east of Wuhan where the outbreaks started.

Methods. We analyzed data from 98 confirmed severe COVID-19 patients in Ezhou Central Hospital between February 1st and March 22nd, 2020. We compared patients' laboratory results, imaging manifestations and treatments between survival and death groups.

Results. Of these 98 confirmed COVID-19 patients, 24 individuals (24.6%) had chronic diseases, such as cardiovascular disease and chronic respiratory disease. The main symptoms of critically ill patients were fever (86.7%), cough (83.7%), and dyspnea (59.1%). Common complications were acute respiratory distress syndrome (ARDS; 49%), acute kidney injury (AKI; 37.7%), and multiple organ dysfunction syndrome (MODS; 32.6%) CT scans displayed ground-glass-opacity (GGO), at subpleural regions that were associated with interlobular septal thickening. Within 28 days, 39 COVID-19 patients died. Compared to survivors, the death group had a higher median age (69.8 *vs.* 61.3, $p < 0.05$), and were more prone to ARDS (100% *vs.* 15.2%) and MODS (76% *vs.* 3.4%) than survivors. Our report showed that in the early days of the COVID-19 outbreak, there was a high mortality rate in critically ill patients. Elderly patients (> 65 years) normally have an increased risk of complications and ARDS. Most non-survivors were highly dependent upon mechanical ventilation.

Conclusion. CT scans with imaging manifestations showed abnormal conditions in the lower multiple bilateral lung lobes, which provides a useful characterization of this fatal disease by recognizing the COVID-19 pneumonia and assessing its evolution for the target for intervention of the patient recovery.

Investigating the Post-Treatment Mechanisms underlying Prolonged Effect of Niclosamide and Camptothecin on Glioblastoma Cells

Authors: Fang X., Cheng B., Lara R., Osho J.B., and Fonseca J. Department of Neuroscience, School of Medicine, University of Texas Rio Grande Valley

Background: Glioblastoma is the most common malignant brain tumor characterized by its aggressive and highly proliferative nature. Although GBM rarely metastasizes to distant organs, it presents unique characteristics that challenge chemo- and radio-therapeutic efforts. Previous studies have attributed glioblastoma's prominent level of resistance to its involvement in multiple signaling pathways. To counter this, current promising treatments, such as Niclosamide and Camptothecin (CPT), have been evaluated and subsequently combined for their synergistic effect, targeting the multiple pathways that glioblastoma upregulates. The current study provides further insight into the duration of effect in with the usage of such promising treatments. The lasting effects the treatment has on the U87 cells will show the more long-term effects of Niclosamide, CPT, and combined treatments have on the cells. It is important to understand how U87 cells recover posttreatment and how long the treatment lasts at inducing cell cytotoxicity.
Methods: Western blot analysis investigated the different components of the suspected pathways affected by Niclosamide and CPT. Long lasting effects of Niclosamide and CPT were studied after 24 hours post individual or combined treatment on cell cycle pathways, autophagy pathway, ER stress pathway, ubiquitin pathway, and MAPK signaling pathway. Cells with each corresponding treatment group: Control, CPT, Niclosamide, and a combination of CPT and Niclosamide, were homogenized and assessed for protein concentration with BCA. 20-30 µg of total protein were then loaded on 4-20% SDS-PAGE, transferred onto nitrocellulose membranes, and blocked with 5% BSA or non-fat dried milk dissolved in TBST. The membranes were then incubated overnight at 4°C with their corresponding primary antibody, washed the next day with TBST, incubated for 1 hour at room temperature with HRP-conjugated secondary antibodies. Protein bands were then imaged with iBright 1500 and quantified using the ImageJ software.
Results: The present study results demonstrate that 24-hour recovery from treatment with CPT, Niclosamide, and combined treatment continue to induce levels of cell apoptosis similar to what has been previously reported. Western blot analysis shows that the methods of cell apoptosis that contribute to cell death 24-hours post removal of the drug include ER stress, cell cycle regulation, and autophagy. Additionally, the 24-hour recovery from treatment continues to show that Niclosamide induced major cell death through inhibition of pro-survival signaling pathways, ER stress and autophagy. Furthermore, CPT induces cell apoptosis through activation of proapoptotic cell signaling pathways.
Conclusions: The findings of the study suggest that post 24-hour recovery from the combined treatment of Niclosamide and CPT continue to suppress cell cycle survival and proliferation. The synergism of Niclosamide with CPT helps induce at least a 24-hour long effect in inducing cell cytotoxicity. These results provide new insight into the long-lasting effects of Niclosamide, CPT, and combined treatments on U87 cells.

Mycotic Aneurysms in Fungal Meningitis: The management in a case of Fusarium Solanimeningitis.

Bouls R; Jhaveri S MPH; Ngo D K, MD; Maldonado C J, MD, MSCI, FACP
University of Texas Rio Grande Valley School of Medicine, Edinburg, TX, USA

INTRODUCTION: We present a 31 y.o previously healthy woman who developed Fusarium solani fungal meningitis after undergoing cosmetic surgeries in Mexico. Fungal meningitis and particularly F. solani meningitis is very rare, and little is known about the extent and frequency of neurovascular complications in patients with this condition. To our knowledge, previous reports of fungal meningitis don't recognize or emphasize enough the importance and extension of neurovascular complications noticed in our patient.
CASE PRESENTATION: A 31-year-old female presented with severe headaches and intermittent fever, two weeks after receiving epidural anesthesia during cosmetic surgery near the Texas-Mexico border. Lab results showed normal WBC at 3.3 x10(3)/mc, and a high-titer ANA of 1:32 but negative for rheumatoid factor, anti-Ro/SSA, Anti-La/SSB, anti-smith and anti-dsDNA, anti-cardiolipin Ab (IgA, IgG, IgM), and lupus anticoagulant. CSF analysis revealed cloudy fluid with an opening pressure of 25cm, a WBC count of 712 per mm3, protein levels of 50 mg/dl, and glucose levels of 38 mg/dl. Other studies, including routine bacterial CSF cultures were unrevealing. Empirical therapy with Amphotericin and Voriconazole was initiated. A CSF 1,3 B-D glucan testing was over 500. Magnetic resonance venography (MRV) reported increased intracranial pressure. A repeated LP opening pressure was 35cm H_2O, glucose was 30 mg/dl, protein levels were over 200 mg/dl, and a WBC count of 743 per mm3. Subsequently, a fungal broad-range PCR and nextgeneration sequencing of the CSF confirmed the presence of Fusarium solani.Despite receiving Intravenous (IV) dual antifungal therapy, the patient's severe headaches and nausea persisted, A cerebral angiogram identified a mycotic aneurysm on the left RCA, treated with an external ventricular drain and coil embolization. She remained in the medical intensive care unit (MICU) to receive ongoing antifungal therapy and close monitoring.
CONCLUSION: Fungal meningitis is predominantly observed in immunocompromised patients, with rare occurrences in immunocompetent individuals. However, our patient developed fungal meningitis following epidural anesthesia, presumptively with contaminated medications and/or equipment. Broad-range PCR of the CSF provided the opportunity to achieve a rapid diagnosis. Screening for infection in exposed patients and prompt initiation of empirical dual antifungal therapy is essential to optimize outcomes. CSF testing, such as B-D glucan, can also help to provide a presumptive non-specific diagnosis of fungal meningitis. To our knowledge, this was the first

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Mystery Case: an effort to diagnose a patient with a decade of relapsing and remitting neurologic symptoms with a comprehensive medical approach

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Background: Muscle weakness and numbness are prevalent complaints amongst patients and can have a varying range of diagnoses from benign inconsequential to life-threatening causes. The pattern and intensity of weakness, accompanying symptoms, medication use, and family history assist the physician in determining if a patient's presentation is caused by infectious, neurologic, metabolic, inflammatory, psychiatric, or drug-induced condition.
Case Presentation: Our patient is a 37-year-old female who presents to the clinic for a follow-up. The patient has a past medical history of Major Depressive Disorder (MDD), Generalized Anxiety Disorder (GAD), and an undiagnosed neuromuscular weakness for approximately 10 years. The weakness can affect a limb or at times an arm and leg and can last days to weeks. She does not note any precipitating symptoms. She had a complaint of a recent onset of numbness in the outer side of the foot that began a week ago and frequent headaches. On physical examination, there was normal muscle tone and strength testing was 5/5 on all extremities except ankle flexion and extension were 4/5 bilaterally. She had bilateral decreased sensation to pinprick on the lateral sole of the feet. Cranial nerves I-XII were intact. Antinuclear antibody testing screen was negative. Thyroid stimulating hormone testing was normal. White blood cell count mildly elevated at 12.4 with an absolute neutrophil count elevated. She reports over the years she's had extensive work-up including MRI of the head, muscle biopsy, nerve conduction testing and multiple specialist visits with no formal diagnosis.Her previous history of relapsing and remitting weakness and numbness raises concern for various neuromuscular disorders further discussed in this article. Our differential includes multiple sclerosis, guillan-barre, systemic lupus, fibromyalgia, or other etiology.
Conclusion: We are faced with a young woman with nonspecific symptoms of intermittent muscle weakness and numbness that have been present for years. We must not miss certain diagnoses such as Multiple Sclerosis while also keeping in mind a high-value approach to care. It is important to note which features are suggestive of MS such as the relapsing/remitting nature, the onset of age 15-50, optic neuritis, Lhermitte sign (shock-like sensation with flexion of the neck), ophthalmoplegia, fatigue and heat sensitivity. There is also a risk of bias impacting our diagnosis as she has MDD and GAD, we may be quick to jump to Fibromyalgia. There is a reported bidirectional association between fibromyalgia and depression where each disease may increase the likelihood of developing the other. Recent studies on post-COVID had brought more understanding to the pathology and treatment of Fibromyalgia which may help our patient. Comprehensive rehabilitation programs with aerobic exercise have demonstrated improvement in post-COVID symptoms attributed to mental and physical fatigue. Though our search continues for an etiology for our patient's intermittent muscle weakness, we also are reassured that we have kept the differential broad, we do not see a diagnosis of multiple sclerosis, and we are focusing on continuing her function and activity.

New Onset Bilateral Pleural Effusion: An Uncommon Presentation of Subclinical Hypothyroidism or a Premature Closure Diagnosis Error?

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Background: Subclinical hypothyroidism is biochemically defined with normal serum-free T4 in the presence of an elevated serum TSH. Common symptoms of an underactive thyroid can include fatigue, weakness, cold intolerance, weight gain despite poor appetite, hair loss, constipation, and depression. Pleural effusions have also been recognized as a clinical sequelae in the literature, where up to 25% of patients can develop a pleural fluid collection in the setting of hypothyroidism. Although not well understood, a mechanism includes an increased capillary permeability that leads to the retention of fluid in pleural cavities and other tissues.
Case presenting: A 66-year-old woman with PMH of hypertension and Type 2 DM presented to the hospital complaining of acute progressive shortness of breath (SOB) for the past two days. She reported the SOB began suddenly, was constant, and was exacerbated by movement and supine positioning. At previous baseline, she was fully functional and independent. She complained of recent weight gain, constipation, dry skin, and lower extremity swelling, but denied subjective fevers, cough, chest pain, and palpitations. Upon admission, she was in respiratory distress requiring oxygen supplementation via nasal cannula. Physical exam revealed reduced breath sounds and dullness to percussion at the lung bases and 2+ pitting edema in the lower extremities. She was afebrile with no leukocytosis. CXR reported moderate bilateral pleural effusions, with CTA confirmation ruling out PE. BNP, liver function tests, urine studies, albumin, and autoimmune workup was negative. The echocardiogram indicated normal right and left heart function and an elevated pulmonary artery systolic pressure of 57 mmHg. Thyroid function tests reported normal T4 level, mild low T3, and elevated TSH. Intravenous furosemide was initiated with rapid response and improvement. Attempted thoracentesis was unsuccessful in obtaining pleural fluid for analysis. Levothyroxine was initiated, and after two days of treatment, the patient demonstrated significant improvement in SOB, with an SpO2 99% on room air and resolution of edema. Follow-up CXR and CT revealed diminished pleural effusions and the patient was discharged without the need for oxygen supplementation. However, the patient returned to the hospital with the same complaint of SOB with bilateral pleural effusion three weeks after the first admission. On this admission, she underwent prompt thoracentesis, and 750 cc of yellow fluid was collected and submitted for fluid analysis. Fluid results were consistent with transudative pleural fluid and lymphocyte-predominant cells. These results and recurrent presentation, despite treatment of hypothyroidism, suggest that there maybe an underlying etiology that still needs to be identified and treated.

Conclusion: Subclinical hypothyroidism should be considered as a potential cause of bilateral pleural effusions when other potential causes have been ruled out, such as heart failure, liver and kidney dysfunction, and nephrotic syndrome. When this diagnosis is confirmed, treatment with levothyroxine and antidiuretics is recommended. However, this case demonstrates that early diagnostic closure can result in readmission for the same initial complaint of SOB from pleural effusion reaccumulation. Therefore, it's crucial to maintain a broad differential diagnosis when investigating the underlying etiologies of persistent or worsening clinical complaints.

Novel Presentation of Migrainous Infarction: Alexia without Agraphia and Right Hemianopsia

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Background: As defined by the International Classification of Headache Disorders, a migrainous infarction(MI) is a migraine with aura whose aura symptoms similar to previous attacks persist for at least an hour in duration along with a corresponding ischemic infarction found in neuroimaging. This is a case of a 62 year-old female who suffered an acute ischemic attack that was later found to be a migrainous infarction. Alexia without agraphia and right hemianopsia as a presentation of the MI is exceedingly rare therefore making this case reportable. There are cases reporting alexia without agraphia that was soon revered following a migrainous aura, but none that persisted for days following.
Case Presentation: The patient is a 62 year old female nurse with well-controlled hyperlipidemia, hypertension, diabetes, and hypothyroidism that presented to the clinic 9 days after an acute ischemic attack in the left posterior cerebral artery (PCA) supplying the left occipitotemporal lobe. The patient presented with a loss of her right-side field of vision and an inability to read words with preserved writing and letter recognition. Nine days prior, the patient experienced a sudden flash of light, followed by migraine symptoms similar to previous episodes. After noticing she was unable to read words, the patient arrived at the ED where she was worked up for a stroke. The CT brain showed evidence of acute ischemia in the left PCA territory, affecting the inferior and medial aspect of the left occipital lobe extending to the posterior medial left temporal lobe. The CT Angiogram showed occlusion of a P3 segment branch of the left PCA. She was admitted to the hospital to identify the nature of the acute ischemic stroke. All studies came back as unremarkable other than a history of a long car ride and clinically insignificant PFO found on transesophageal echo. Treatment recommendations and discussion on various aspects of the case are outlined in this report.
Conclusion: This is the first persisting case of alexia without agraphia in a migrainous infarction patient. There are cases reporting a transient sort of alexia without agraphia following a prolonged migrainous aura, but none persisting for more than a week after the episode. The case presented can expand on the current documented clinical presentations and provide further direction for future research on treatment algorithms and effective prophylaxis regimens.

Oncoplastic Nipple Sparing Mastectomy and Immediate Reconstruction in Non-ideal Candidates

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Background: Mastectomies have long been used as a surgical treatment for malignant and benign disorders of the breast, both as a therapy and prophylaxis in high-risk patients. A nipple-sparing mastectomy (NSM) allows for removal of most of the glandular and ductal tissues while preserving the surface architecture of the nipple-areola complex (NAC). In satisfactory surgical candidates, this procedure allows for superior aesthetic outcomes compared to other mastectomy techniques and minimizes the need for additional procedures to reconstruct the nipple. Here, we summarize the established treatment standards and suggest an expansion of the established surgical techniques and selection criteria of NSM in the context of immediate-implant based breast reconstruction. We present two patients, and discuss the safety and efficacy of using hybrid-oncoplastic techniques to perform primary breast reconstruction in women undergoing NSM as non-ideal candidates.
Methods: Patient 1 is a 47-year-old woman with a positive family history of both breast cancer and BRCA mutation who underwent a prophylactic mastectomy. Patient 2 is a 41-year-old woman who had undergone extirpative therapy for her breast cancer. The patients have a BMI of 32 and 30 kg/m2 respectively as well as grade 2 ptosis which might otherwise disqualify them from NSM with immediate implant based reconstruction.
Results: Performing a NSM and immediate, implant based reconstruction of these non-ideal patients allows for us to achieve an aesthetically pleasing, repositioned nipple-areolar complex at the time of their extirpative operation and minimizes their need for multiple operations. Both patients are healing within normal limits with satisfactory aesthetic outcomes.
Conclusion: The superior aesthetic outcomes, the retention of the native NAC architecture, and the sparing of multiple additional operations make this hybrid technique an enticing option for patients and surgeons alike. Expanding the selection criteria to include these non-ideal candidates will allow for more patients to pursue a more aesthetically pleasing result in fewer stages. More research will be required In satisfactory surgical candidates.

Outcomes Following Total Hip Arthroplasty for Hip Dysplasia in Older Adults. Are TheyComparable to those with Osteoarthritis?
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Background: Complications from hip dysplasia during infancy and childhood can be prevented with an early diagnosis and immediate treatment. However, those who delay interventions have an increased risk of developing secondary osteoarthritis in adulthood. We sought to investigate and compare the pre-and postoperative outcomes of primary total hip arthroplasty (THA) in older adults with hip dysplasia to those with end-stage osteoarthritis (OA).
Methods: A prospectively collected database from a single institution dating from September 1st, 2016 to October 31st, 2021 was used to identify 323 unilateral THA patients who were 50 years or older and then separated into 2 groups based on a primary diagnosis of hip dysplasia (n = 90 patients) or osteoarthritis (n = 233 patients). Pre-and minimum 1-year postoperative outcomes between the groups were then analyzed and compared using the Harris Hip Score (HHS), Hip Outcome Score (HOS), Hip Disability and Osteoarthritis Outcome Score (HOOS), Pain Catastrophizing Score (PCS), and the Depression Anxiety Stress Scale (DASS).
Results: The reported outcomes from the two groups showed no statistically significant differences in the pre-and post-op HOOS (P = 0.22 and P = 0.63 respectively), DASS Anxiety (P = 0.81 and P = 0.29 respectively), and the DASS Stress Score (P = 0.17 and P = 0.28 respectively). The patients with hip dysplasia reported significantly better pre-op (10.1 vs 12.9) and post-op (5.7 vs 7.2) DASS Depression Scores compared to the OA group (P < 0.05 and P = 0.01 respectively) but scored significantly lower in the pre-op HOS (35.4 vs 42.2, P < 0.05) and the HHS (84.7 vs 88.1, P < 0.05).
Conclusion: Our investigation demonstrates THA as an excellent surgical option for the management of hip dysplasia in older adults and can yield comparable improvement in reported outcomes following primary THA performed for those with end-stage OA.

Preoperative Pain Catastrophizing, Depression, and Anxiety in THA Patients with Differing Radiographic Severity
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Background: Comorbid mood disorders and pain catastrophizing behavior in patients with hip osteoarthritis have been associated with worse pain scores and more functional limitations before and after undergoing a total hip arthroplasty (THA). There remain questions regarding the relationship between severity of hip disease and mental health factors on preoperative measures in patients with differing radiographic disease. The purpose of this study was to assess preoperative pain catastrophizing, depression, and anxiety scores in THA patients with less severe radiographic hip arthritis compared to those with more severe radiographic disease.
Methods: A total of 785 patients were enrolled in a prospective cohort of THA patients at a tertiary hip program over a 5-year period. Study participation consisted of preoperative and postoperative survey completion with a minimum of 1-year postoperative follow-up. The Pain Catastrophizing Scale (PCS) was used to assess for pain catastrophizing. The Hospital Anxiety and Depression Scale (HADS-A, HADS-D) was used to assess for anxiety and depression. Radiographic severity was assessed using preoperative radiographs and was graded with the Tönnis classification of osteoarthritis and joint space width.
Results: Preoperative and postoperative surveys were completed for 411 patients. Preoperatively, 58 patients (14.11%) had a clinically relevant PCS score, 72 patients (17.52%) had an abnormal HADS-D score, and 69 patients (16.79%) had an abnormal HADS-A score. Tönnis Grade 0/1 patients had more abnormal preoperative HADS-A scores than Tönnis Grade 2/3 patients (20.51% vs 11.11%, p = 0.036). There were no statistically significant differences in the preoperative PCS (p = 0.104) and HADS-D (p = 0.188) scores between Tönnis Grade 0/1 patients and Tönnis Grade 2/3 patients.
Conclusions: Our study demonstrates that patients with less severe radiographic disease had greater anxiety scores. This suggests that patients with clinically relevant anxiety were more likely to undergo a THA earlier in the course of their hip pathology rather than continuing with conservative management until they progress to end-stage disease. There was no difference in pain catastrophizing and depression scores between groups of less and more severe hip disease

Periacetabular Osteotomy: An Analysis of Social Media to Determine the Most Common Questions Asked by the Periacetabular Osteotomy Population
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Background: Social media has become an increasingly popular resource for patients and a platform to share one's experiences. Patients undergoing periacetabular osteotomy (PAO) may gravitate towards social media for support, guidance and understanding. The aim of this study was to investigate Facebook, Instagram and Twitter to further understand what the most common preoperative and postoperative questions patients undergoing PAO are asking.

Methods: Facebook, Instagram and Twitter were queried consecutively from February 1, 2023 to November 23, 2011. Facebook was searched for the two most populated interest groups; “Periacetabular Osteotomy (PAO)” and “Periacetabular Osteotomy Australia”. Instagram and Twitter were queried for the most popular hashtags: “#PAOwarrior”, “#PAOsurgery”, “#periacetabularosteotomy”, “#periacetabularosteotomyrecovery”, and “#paorecovery”. Patient questions were categorized according to preoperative and postoperative questions. Questions were further placed into specific themes in their respective preoperative or postoperative question types.
Results: Two thousand five hundred and fifty-nine posts were collected, with 849 (33%) posts containing 966 questions. Of the 966 questions, 443 (45.9%) and 523 (54.1%) were preoperative and postoperative questions, respectively. The majority of questions were postoperative complication related (23%) and symptom management (21%). Other postoperative questions included recovery/rehabilitation (21%), and general postoperative questions (18%). The most common preoperative questions were related to PAO education (23%). Rehabilitation (19%), hip dysplasia education (17%), and surgeon selection (12%) were other preoperative questions topics included. Most questions came from Facebook posts. Of 1,054 Facebook posts, 76% were either preoperative or postoperative questions and from the perspective of the patient (87%).
Conclusion: The majority of patients in the PAO population sought advice on postoperative complications and symptom management. Some patients asked about education surrounding PAO surgery. Understanding the most common concerns and questions patients have can help providers educate patients and focus on more patient-relevant perioperative conversations.

Plasma cell free DNA (cfDNA) Test for Diagnosis of Infectious Diseases in Children: A Tertiary Care Children’s Hospital Experience
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INTRODUCTION: Plasma cell free DNA (cfDNA) test (Karius Test®, KT) has emerged as an attractive diagnostic modality allowing noninvasive broad-range pathogen detection, and fast diagnosis. There are however few studies examining the impact of the KT in the diagnosis and management of infections in children. Our study aimed at evaluating the clinical impact of plasma cfDNA test since it was used at our institution.
METHODS: Our retrospective study included children between 0 to 21 years of age who were admitted to Driscoll Children’s Hospital, Corpus Christi, Texas between January 2019 and January 2022. Demographic and clinical course data were collected. KT and conventional tests (CT) results were analyzed to determine their agreement and clinical relevance of organisms. Clinical impact in diagnosis was assessed separately according to revised objective grading criteria.
RESULTS: Among 182 patients identified, the median (SD) age was 9 (6.1) years, with 99 (54.4%) males and 150 (82.4%) Hispanic, 53 (29.1%) patients are immunocompromised, the median (SD) hospital length of stay was 17.2 (37.7) days. Among 186 Karius Test® ordered (Table 1), 97 (52.2%) tests were sent from general wards. 102 (54.8%) were positive for one or more organisms. Median (range) turn-around time for KT 2.8 (1.7-11.6) days. 59 (31.7%) KT results had positive clinical impact in diagnosis (Table 2 and 3), higher positive impact were found in the diagnosis of pneumonia (44.4%), bacteremia (42.9%), and musculoskeletal infection (41.2%). KT was the only diagnostic modality that provided the diagnosis in 41 (22%) cases (Table 3), including *Streptococcus pneumoniae*, *Pneumocystis jirovecii*, *Rickettsia typhi*, and *Bartonella henselae*. Among 41 cases, KT had shorter turnaround time than conventional tests in 31 (75.6%) cases.
CONCLUSIONS: In this retrospective cohort, we show that the plasma cell free DNA (cfDNA) test (Karius Test®) provided the only method of etiological diagnosis in 41 children. It was particularly useful in the diagnosis of pneumonia, musculoskeletal infection, bacteremia, Pneumocystis jirovecii and murine typhus with a relatively short turnaround time.

Prevent Congenital Syphilis: A Facebook-Based Retrospective Analysis of Community Questions to Identify Gaps in Knowledge and Misconceptions
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Background: Congenital syphilis is a significant public health issue that occurs when a pregnant woman with untreated syphilis transmits the infection to her unborn child, which can lead to severe health consequences such as developmental delay, stillbirth, and neonatal death. Despite the availability of effective treatments, the incidence of congenital syphilis has been increasing in recent years, particularly in certain populations such as women of color and those living in poverty. This project aims to better inform public health measures by leveraging social media as a data source for understanding community perspectives on syphilis prevention and management.
Methods: In this study, we conducted a Facebook-based retrospective analysis of community questions related to syphilis. Utilizing convenience sampling, data was collected from the UTRGV School of Medicine - Pediatrics "Prevent Congenital Syphilis" Facebook group from February 2021 to June 2023. The sample size consisted of 1,320 Facebook group members. Group member questions were categorized into 14 different categories, and the geographic distribution of users was determined based on the available profile information.
Results: Our analysis revealed that a total of 234 users actively engaged with the Facebook group by posting, commenting, or sending direct messages to the group administrators via Messenger. Among the 146 users with available geographic location data, 44.9% were from Africa, 13.7% from Asia, 2.3% from North America, and 0.9% from Europe. We observed representation from a total of 26 countries, with the top 3 countries of South Africa, Kenya, and Zambia representing 52.1% of our users. Overall, we identified 168 users who had questions directly related to syphilis. Notably, the highest number of questions pertained to Treatment & Medication with 82 total questions, Symptoms & Signs with 45 total questions, and Pregnancy & Congenital Syphilis with 29 total questions.

Conclusions: The utilization of social media platforms, such as Facebook, allows for a broader reach and greater engagement with communities worldwide. The active interest demonstrated by the engagement of users within the Facebook group indicates a strong willingness to seek information and clarification regarding syphilis-related topics. The significant number of questions regarding the treatment and symptoms of syphilis provides valuable insights that can guide the development of targeted outreach initiatives. The data collected in this study will be reviewed with the UTRGV SOM Prevent Congenital Syphilis team and the State of Texas DHSH who fund the project, incorporating their suggestions and expertise into the project going forward. We aim to collaborate with healthcare providers, public health organizations, and community stakeholders to implement targeted awareness campaigns. By leveraging the findings from this project, we seek to create impactful educational materials and campaigns that address the identified knowledge gaps and misconceptions, ultimately reducing the incidence of congenital syphilis. This study underscores the critical need for public health education, emphasizes the extensive influence of social media platforms, and demonstrates the strong engagement surrounding syphilis-related subjects.

Rare Presentation of Oral Squamous Cell Carcinoma of the Tongue with Ectopic β-hCG Secretion: A Case Report and Literature Review
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Background: Oral squamous cell carcinoma is the most common form of cancer in the oral cavity and pharynx, comprising more than 90% of all cases, with approximately half presenting with regional lymph node spread at the time of diagnosis. Pathogenesis includes various stages of progression encompassing multiple genetic and cellular events that ultimately lead to the malignant transformation of the squamous cells and invasion into surrounding tissues. Given the multistep nature of disease progression, recent studies have investigated potential prognostic indicators and screening markers through immunohistochemical staining and few studies suggest that human chorionic gonadotropin may be one marker that can provide clinicians valuable information. Although human chorionic gonadotropin (β-hCG) levels are commonly recognized for detecting early pregnancy, they can also be used as a tumor marker in diagnosing gestational trophoblastic disease, neuroendocrine tumors, and various carcinomas. Literature suggests that the expression of β-hCG by these tumors, compared to β-hCG negative variants, is associated with poorer outcomes and statistically shorter survival time. We present a unique case of increased serum β-hCG concentration from a poorly differentiated oral squamous cell carcinoma of the tongue.
Case Presentation: A 47-year-old female presented to the emergency room with a large firm tumor of the tongue that was profusely bleeding. Physical examination revealed bilateral hypoglossal weakness with paralysis on the right side and paresis on the left. Patient demonstrated bilateral submandibular and cervical lymphadenopathy and dysarthric speech. Medical history was significant for previous right lateral tongue leukoplakia treated with antibiotics and steroids. Patient denies history of smoking or alcohol consumption. MRI imaging demonstrated significant enhancement of the enlarged right tongue with left posterolateral sparing with enhancement extending to the right geniohyoid muscles, anterior belly of the right digastric, and bilateral palatine tonsils. Lymph nodes of the right neck (zone II), left neck (zone II), and right submandibular were all enlarged, but only right neck lymph nodes were necrotic. Further workup for surgical intervention was significant for a positive pregnancy test, despite patient history of a bilateral tubal ligation. The tumor was biopsied, and pathology demonstrated that the lesion of the right lateral tongue was an invasive oral squamous cell carcinoma that was well to poorly differentiated (T4N2cMX). The oral squamous cell carcinoma was suspected to have increased serum levels of β-hCG.
Conclusions: This case report advocates for further research on the potential use of β-hCG as a screening modality and prognostic indicator for oral squamous cell carcinomas. Currently approximately 3 out of every 4 oral cavity and pharynx cancers are diagnosed beyond the localized state, thus highlighting the importance of developing any method that can detect disease earlier or determine urgency and course of treatment to enhance overall survival and patient quality of life.

Skin Conditions and Villainous Depictions in Anime Films: Exploring Unconscious Bias in Patient-Provider Interactions
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Background: Film and artistic media have the ability to influence societal perception of dermatological conditions. Literature describes how both live-action and animated films tend to depict villainous characters with a disproportionately greater number of skin conditions, thus contributing to the stigma surrounding skin conditions and their association with moral deficiency. However, the majority of literature tends to examine films of cultural, historic, and aesthetic significance in Western canon. This study seeks to include perspectives from East Asian cinema by evaluating dermatological findings of heroes and villains in popular anime films and assessing whether an increased number of skin conditions is associated with villainous characterization. The examination of film which holds particular influence within the Asian American and Pacific Islander (AAPI) community expounds upon the cultural and demographic implications of existing literature. It may also elucidate the role of film as a potential source of unconscious bias in patient-provider interactions.
Methods: The complete filmography of Studio Ghibli, a Japanese anime studio with popular renown and significant viewership within the AAPI community, was evaluated. A villain and hero were determined from each film, and dermatological characteristics were evaluated accordingly. A number of the films did not have a clear villain for various reasons (for example, several films centered on internal conflict rather than a personified villain). Thus, only heroes were evaluated in these cases. If a film featured multiple heroes or an ensemble cast of heroes, a representative hero was selected for the group. Villains and heroes depicted as animals were excluded from analysis. Fisher's exact test was used to determine whether there was a significant difference in the number of dermatological findings between villains (n=14) and heroes (n=21).

Results: Statistical analysis revealed a significant difference in the overall number of dermatological findings for villains compared to heroes (p=0.0007). Villains had a higher prevalence of suborbital bags, lateral canthal lines, periorbital hyperpigmentation, hematoma, nasolabial folds, androgenetic alopecia, rhytides, mole, rhinophyma, buccula, and verruca vulgaris compared to heroes. Heroes had a higher prevalence of transient bruising, transient skin abrasion, erythema, hyperpigmented mark, scar, cutaneous blisters, and freckles compared to villains. Prevalence of lateral canthal lines and nasolabial folds was significantly higher in villains (p=0.0099 and p=0.0153, respectively).
Conclusions: The results support an association between villainous characterization and dermatological findings in popular anime films. These findings may contribute to the stigmatization of skin disorders, particularly within the AAPI community. The association of skin conditions with moral deficiency may also lead providers to unconsciously negatively evaluate a patient. It is unknown to what extent this bias negatively impacts patient care on a population level. Further studies are needed to investigate implicit bias in patient-provider interactions with particular focus on dermatological conditions on patient presentation.

Small Cell Carcinoma of the Bladder: A Rare Case
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Abstract:
In this case report, we explore a case of small cell bladder carcinoma in a 75-year-old man with a history of smoking. This is a unique, aggressive subtype of bladder cancer which, in this patient, presented with gross hematuria. Workup included cystoscopy and transurethral resection of the bladder tumor, and pathological confirmation of the diagnosis elicited a referral to oncology for staging CT and potential chemotherapeutic measures. While the small cell carcinoma was successfully identified, it had already invaded the detrusor muscle on presentation, prompting the question of how to go about diagnosing and treating this subtype of bladder cancer earlier, which future studies may explore.

Submental Intubation in Oral Maxillofacial Surgery: A Case Report and Review of Indications and Complications
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Introduction/ Background: Submental intubation is a valuable alternative airway management technique employed in oral maxillofacial surgery when intraoral or nasal intubation is contraindicated or poses a potential risk (Schütz, 2008). This case report presents a clinical scenario in which a patient underwent oral maxillofacial surgery necessitating submental intubation. Additionally, we review the indications, technique, and potential complications associated with this specialized intubation approach. Oral maxillofacial surgeries frequently involve complex fractures, extensive soft tissue injuries, or anatomical variations that preclude traditional intraoral or nasal intubation. Submental intubation provides a safe and effective option in such cases, avoiding the need for tracheostomy or alternative invasive procedures (Caron, 2000). During submental intubation, a modified oral endotracheal tube is passed through an incision made in the submental region, and then threaded into the oropharynx, allowing for secure airway access while preserving the integrity of the oral cavity and nasal passages. This technique offers several advantages, including improved surgical field visualization, reduced risk of oral trauma, better postoperative pain management, and enhanced patient comfort during the recovery phase (Valsa, 2012). However, submental intubation is not without potential complications. These include surgical site infection, subcutaneous emphysema, hematoma formation, damage to the sublingual and lingual arteries, recurrent laryngeal nerve palsy, and difficulty with tube manipulation. Familiarity with the anatomical landmarks and meticulous technique is essential to minimize these risks and optimize patient outcomes (Das, 2012).This case report highlights a patient who underwent oral maxillofacial surgery and required submental intubation due to complex facial fractures. By presenting this case and reviewing the literature, we aim to enhance understanding of the indications, technique, and potential complications associated with submental intubation in oral maxillofacial surgery.
Case Description: The patient is a 45-year-old female with a past medical history of diabetes mellitus (DM), hypertension (HTN), and hyperlipidemia (HLD), transferred to a level 1 trauma center following a motor vehicle collision (MVC). The patient, a restrained driver, collided with a school bus, resulting in her vehicle going underneath the bus. She arrived at the emergency department intubated and sedated, with a Glasgow Coma Scale (GCS) score of 3T, indicating severe neurological impairment. Upon physical examination, the patient presented with a deformity of the face, specifically a depressed nasal bridge. Trauma CT scans were performed, revealing multiple significant injuries. These included comminuted fractures of the nasal bones and a bony nasal septal fracture. Additionally, a left orbital blowout fracture, bilateral inguinal sinusitis, and fractures of the bilateral orbital and maxillary sinus walls were observed. The left inferior rectus muscle was entrapped in the left orbital blowout fracture, resulting in the presence of intraorbital air bubbles and subcutaneous emphysema. Furthermore, bilateral lung contusions were detected on the CT scan. Due to the severity of her life-threatening injuries, the patient was admitted to the Surgical Intensive Care Unit (SICU) for further surgical management. Interval surgery was performed, specifically addressing the left orbital floor and maxillary sinus fracture, which demonstrated decreased displacement and angulation compared to the initial assessment. The complexity of this surgery as well as the extent of her lesions prompted the Anesthesiology team to perform a submental intubation to properly secure the patient's airway.
As a result of the treatment, the patient's respiratory status significantly improved, leading to the discontinuation of DuoNeb and positive expiratory pressure (PEP) therapy, which had been initiated to address acute hypoxemic respiratory failure and respiratory alkalosis associated with the bilateral pulmonary contusion.

Discussion: Submental intubation is an effective way to ensure the restoration of a functional airway in the setting of simple to complex OMF trauma fractures. This intubation method secures a patient's airway while providing uninterrupted access to the operative field. OMF trauma fractures may compromise adequate mask ventilation due to facial edema, facial asymmetry, nasal septum deviation, or oral occlusion by blood and secretions. Thus, in the setting of trauma, the airway must be secured using a method that is quick and allows for adequate ventilation. When compared to nasotracheal or orotracheal intubation, submental intubation is associated with minimal complications. Complications such as nasal bleeding, tracheal stenosis, neck vessel injuries, or skull base fractures are rarely seen in submental intubations (Agrawal, 2010). OMF trauma fractures may result in alteration of normal airway anatomy thus adding to the difficulty of inserting a nasotracheal tube despite the assistance of Fiberoptic bronchoscopy or Video laryngoscopy. The patient presented with nasal, orbital, and bilateral maxillary fractures making submental intubation the more effective method compared to nasotracheal intubation. Performing a tracheostomy would also be a viable alternative in this case, however this method is associated with increased complications, including: hemorrhage, pneumomediastinum, subcutaneous emphysema, pneumothorax, tracheal erosions, dysphagia, stoma infection, voice changes, and excessive scarring. According to the International Journal of Oral and Maxillofacial Surgery, if maxillo-craniofacial surgery is indicated and less than 7 days are required for ventilatory support, a patient with jaw fractures, naso-orbital ethmoid fractures, or contraindications to nasotracheal intubation should be initially intubated through the submental route (Figure 1, Jundt et al. 2012). Previous studies have shown that the average time required for completion of submental intubations may range from 5.6-9 minutes (Valsa et al, 2012). According to Valsa et al, the average time it takes to disconnect the endotracheal tube from the ventilation circuit while performing a submental intubation is approximately 1.5±0.35 min. A shorter disconnection time from the ventilatory circuit, decreases the chances of hypoxic injury to the patient during intubation. The patient tolerated this method of intubation well as a secure airway was established and sufficient space for the operation was provided. After surgery, the patient was transferred to the ICU and discharged home a few days later.

The Difficulty in the Diagnosis and Management of Antidepressant Discontinuation Syndrome

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Background: Antidepressant discontinuation syndrome (ADS) is a condition that occurs in about 20% of patients following the abrupt reduction/stoppage of any antidepressant medication that has been taken continuously for at least 1 month. The difficulty of diagnosing ADS lies in the fact that the symptoms tend to be mistaken for other illnesses. Symptoms are commonly variable per individual, and the staggered presentation of symptoms can contribute to the difficulty in diagnosing ADS.

Case Presentation: We present a 36-year-old Hispanic woman who comes for evaluation of worsening, generalized body aches for the past 3 days. Associated signs and symptoms included rhinorrhea, trouble sleeping, fatigue, and headaches. She reports recent exposure to a sick co-worker. She has a prior history of MDD and GAD. PHQ-9 and GAD-7 showed both mild depression and mild anxiety. Vitals signs and physical exam were unremarkable. Rapid flu, strep, and COVID tests came back negative. Pt was diagnosed with a viral URI and was discharged with counseling on supportive treatment. The patient returned two days later due to severe worsening symptoms, uncontrollable episodes of crying, new-onset tremors, and bilateral upper extremity paresthesia. She denies SI, HI, and drug use. Upon questioning of psychiatric history, the patient noted recent one-week hospitalization in a psychiatric facility around 1.5 months ago in which she was weaned off venlafaxine 150 mg PO daily and switched to fluoxetine 20 mg PO daily. Upon discharge, she took fluoxetine for about 5 weeks but abruptly stopped taking the fluoxetine 2 weeks ago because her mood symptoms had resolved. Vitals sign noted elevated blood pressure at 131/82. Physical exam noted an anxious, tearful woman that is in visible discomfort. PHQ-9 and GAD-7 were administered and her scores were 27 and 21, indicating both severe depression and severe anxiety. The patient was advised to restart fluoxetine 20 mg PO daily. She was counseled on the importance of medication compliance. UDS and TSH levels were both negative. During the one-week follow-up, the patient reported that her symptoms have largely resolved. PHQ-9 and GAD-7 were readministered which were 12 and 9 respectively, indicating moderate depression and mild anxiety. A referral for counseling services was placed in order to address her cognitive distortions and mood symptoms.

Discussion: This case illustrates the complexity of the diagnosis and management of ADS. It is vital for clinicians to keep a high index of suspicion when symptoms occur especially with patients with a prior history of psychiatric illness. Patient education on the importance of medication compliance is critical to prevent the formation of ADS. A significant challenge in treatment lies in the fact that there is a lack of consensus on the rate of medication tapering across different studies. Many studies have recommended that it is unnecessary to taper long-acting antidepressants, such as fluoxetine. As depicted in this case, it is important to slowly taper all antidepressant medications as some patients can still exhibit rare but severe discontinuation symptoms from long-acting antidepressants.

The Impact of Opuntia ficus-indica and Other Vegetables on Serum Cholesterol and Triglycerides: A Cross-Sectional Analysis

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Background: Cholesterol is primarily synthesized in the liver. Treatment with statins and diet regulation are commonly prescribed for people with hypercholesterolemia. Previous claims suggest that the consumption of nopal and other vegetables may have a significant effect on diabetes but scarce is known about its relationship with cholesterol and triglycerides. The aim of this study was to evaluate the impact of nopal and other vegetables on serum cholesterol and triglyceride level in population not related with hypercholesterolemia.
Methods: We analyzed a dataset comprising of students from UMAN and their relatives totalling 198 participants. Participants completed an informed consent, filled out questionnaires, anthropometric and serum lipid measurements. A semi-quantitative food questionnaire assessed the frequency and amount of consumption for 56-specific foods. We did a factor analysis with varimax rotation using 7 specific foods we were interested. We conducted linear regression analyses with total cholesterol, LDL-c, and triglycerides as dependent variables. Age, sex, BMI, body fat percentage, and consumption factors (fruits, vegetables, and grains) were included as predictors. Collinearity was assessed using VIF calculations.
Results: Approximately 48% of participants consumed nopal on a weekly basis, with most considering their intake to be of "median" to "large" amounts, while only 11% reported never consuming nopal. Participants with diabetes showed higher nopal consumption [3.1 (s.e.m. 0.24) vs non-diabetic 2.7 (0.22) vs unknown 1.7 (0.28), $p<0.04$]. A slight correlation was observed between high self-efficacy in diet and nopal ingestion (rho 0.15, $p=0.02$), but no significant correlations were found for fruits or grains. Regression analysis revealed that LDL-c was associated with obesity ($b=-20$, $p=0.04$) and marginally with body fat percentage (adjusted $b=0.83$, $p=0.069$), but not with any of the consumption factors. Total cholesterol was explained by age (adjusted $b=0.5$, $p=0.002$) and body fat percentage ($b=1.05$, $p=0.024$). HDL-c was marginally associated with sex (Male $b=-8.3$, $p=0.08$), while triglycerides were associated with age and obesity (overweight and Class-I, $b=0.04$, $p=0.001$ and $b=0.04$, $p=0.04$, respectively). No collinearity was found in the analyzed regressions (VIF between 0.1 and 3.4).
Conclusion: Our findings suggest that cholesterol and other lipid traits are primarily influenced by genetic factors, with diet playing a minor role. Nopal, vegetables, and fruit showed no significant effects on serum lipid levels in our study. A limitation of our study is its cross-sectional design, and future research could benefit from longitudinal studies with controlled amounts of nopal and other foods.

The Significance of Reactive Oxygen Species in Physiological Processes and Hematological Disorders: Insights into Cardiovascular and Cerebrovascular Diseases

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Background: Reactive oxygen species (ROS) play a dual role in biomedicine, acting as essential molecules in cellular metabolism and signaling while posing a threat to cellular components through oxidative damage. This poster explores the significance of ROS in various physiological processes and hematological diseases associated with cardiovascular disease and cerebrovascular disease.
Methods: We have thoroughly studied over 60 most recent or related literature to the topic and determine important roles of ROS in various biological systems, cardiovascular and cerebrovascular diseases.
Results: ROS are crucial in cell signaling, immune response, and gene expression, but excessive levels can lead to oxidative stress and cellular dysfunction. Oxidative stress can disrupt intracellular processes, including programmed cell death, downstream signaling, and cellular proliferation. Consequently, the regular functioning of tissues subject to oxidative stress is altered, enabling the development of diseases. ROS play a significant role in the pathogenesis of coronary heart disease, contributing to atherosclerosis, endothelial dysfunction, and thrombosis. ROS production leads to modification of LDL, causing atherosclerotic plaques. Increased ROS production in vascular smooth muscle cells and impaired endothelial function promote atherosclerosis development. Additionally, high glucose levels promote the formation of plateletmonocyte aggregates in diabetic patients, increasing risk of coronary artery disease. ROS also play a critical role in pathogenesis of cerebral vascular disease (CeVD). Oxidative stress markers have been correlated with severity of CeVD, including stroke and cognitive impairment. Potential therapeutic strategies, including polyphenols and ROS scavengers, are effective in mitigating oxidative stress-related damage and improving outcomes in CeVD patients.
Conclusion. This understanding of ROS in biomedicine guides innovative therapies to restore redox balance and reduce oxidative stress's detrimental effects.

Unmasking the Chameleon: A Rare Case of Generalized Bullous Fixed Drug Eruption

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Background: Fixed drug eruption (FDE) is a unique dermatological drug reaction known for its recurrence in identical locations upon re-exposure to the causal drug. Acute FDE typically manifests a single or a small number of dusky red or violaceous plaques that, once resolved, leave post-inflammatory hyperpigmentation. The case we present involves a patient with maculopapular bullous rash on his back, chest, and extremities. The rash was initially misdiagnosed as Chickenpox, yet a skin biopsy indicated Bullous Drug Eruption as a more likely diagnosis. This case is novel as the patient's medical history did not reveal any previous intake of drugs most frequently associated with FDE, but the histopathology evidence confirmed the diagnosis of FDE and the final diagnosis was made.
Case Presentation: Patient is a 58-year-old male with a history of hyperlipidemia and thyroid disease who presented to the Emergency Department (ED) with chest pain and left upper extremity weakness. The patient presented with a day of 6/10 anterior chest pain "unlike anything he has ever felt before". radiating to the back, associated with shortness of breath without aggravating or precipitating factors. The patient also reported two days of bilateral upper extremity weakness and generalized fatigue requiring a cane for ambulation . He reported poor appetite, cough, nausea, vomiting at home and a new "itchy", non-painful maculopapular rash on his back. His temperature was 38.9C, heart rate 134 bpm, respiratory rate 22, blood pressure 144/77mmHg, white blood cell count 17 × 109/L, lactic acid 1.9 mmol/L, fulfilling the systemic inflammatory response syndrome (SIRS) criteria. He was diagnosed with Sepsis and started on a Sepsis treatment protocol including fluids and IV antibiotics. Chest x-ray was unrevealing, EKG demonstrated sinus tachycardia and high-sensitivity cardiac troponin (hs-cTn) was 133 ng/L which was trending down on subsequent serial evaluations and subsequent cardiac studies were also unrevealing. He had negative sputum and blood cultures and negative CMV, EBV, HIV testing. Neurology was consulted for his upper extremity weakness. Neuroimaging revealed cervical canal narrowing and mediastinal lymphadenopathy. Infectious disease was consulted regarding rash and lymphadenopathy. At tentative diagnosis was chicken pox and acyclovir was initiated. However, the rash worsened into a maculopapular bullous rash on the patient's back, chest and upper extremities and lymphadenopathy. Dermatology was consulted and a biopsy was performed indicating Bullous Drug Eruption. Following this diagnosis, acyclovir was discontinued, and the patient was started on prednisone oral, and the patient's rash improved significantly following the initiation of this treatment.
Conclusions: Generalized bullous fixed drug eruption, a rare variant of FDE, may present with atypical features, mimic other skin diseases. Histological examination of a skin biopsy is instrumental to establish a diagnosis in cases with unusual clinical features. Management primarily involves the discontinuation of the offending agent, if identified, and symptomatic treatment. This case serve to discuss a novel presentation of an FDE variant and contribute to the current clinical understanding of the disease.

Using the Behavioral Risk Factor Surveillance System to Determine the Association of Alcohol Use and Depressive Disorders in Texas, 2019-2021

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Background: Alcohol is a commonly consumed substance and has been widely studied to negatively affect mental health. Alcohol misuse and depression often coexist as comorbid conditions. The presence of one can exacerbate the other, creating a cyclic pattern that may be challenging to break. Understanding the relationship between alcohol usage and depression may guide researchers and healthcare professionals towards prevention efforts and treatment strategies to increase the chances of achieving long-term wellness and improved mental wellbeing in our community. Objective: To examine the association of alcohol use and depressive disorders in a randomly sampled adult population in Texas.
Methods: The Behavioral Risk Factor Surveillance System is the largest national telephone-based survey system in the United States. The system contains de-identified public data of randomly sampled individuals. From 2019 to 2021, cross-sectional data were collected and analyzed using multivariate logistic regression models from 13,568 participants in Texas. P-values < .05 were statistically significant. Analysis was performed to determine the relationship between alcohol use and other variables and self-reported diagnoses of depressive disorders: major depressive disorder, dysthymia, or minor depression. These variables include demographic information and factors related to social determinants of health.
Results: From 2019-2021, 13,568 participants' responses were analyzed using multivariate logistic regression. Compared to those who reported drinking no alcoholic beverages per week, participants who drank more than 1 alcoholic beverage per week had increased odds of reporting being diagnosed with a depressive disorder; however, the association was not significant: up to 7 drinks (OR 1.33, p-value 0.55), up to 14 drinks (OR 1.32, p-value 0.58), 14 or more drinks (OR 1.38, p-value 0.54). There were significantly increased odds for those who reported drinking 5+ drinks for men or 4+ drinks for women on an occasion 5 times or more, in the past 30 days, to report being diagnosed with a depressive disorder (OR 1.53, p-value 0.01). Relative to white, non-Hispanics and those underweight (BMI < 18.5), other racial groups and those with normal and overweight BMIs (BMI 18.5 – 29.9) had significantly decreased odds of reporting a depressive disorder. Age groups less than 65 (18-24: OR 2.99, p-value < .0001; 25-44: OR 2.25, p-value <.0001, 45-64: OR 1.73, p-value .0003) and participants out of work for over a year (OR 2.83, p-value < .0001) or unable to work (OR 8.61, p-value .0001) had the highest odds of reporting a form of depression.
Conclusions: These findings substantiate the need for greater efforts to aid those under the age of 65, specifically with seeking employment and initiatives to decrease heavy alcohol use (defined as 5+ drinks for men or 4+ drinks for women) to decrease the prevalence of depressive disorders in Texas.

GRADUATE STUDENT CATEGORY

Association Between Alcohol Use and Negative Mental Health Symptoms in the Rio Grande Valley

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Background: This study's purpose was to research the link between alcohol use and negative mental health symptoms in the Rio Grande Valley. As current literature suggests, the Rio Grande Valley has above average alcohol consumption and negative mental health symptoms, especially among young adults. Recent studies indicate there may be an association between the amount of alcohol one consumes and the likelihood of experiencing negative mental health symptoms such as depression and anxiety and vice versa. The RGV's population and culture provides a unique opportunity to study this correlation and better advise the community and health care professionals about potential consequences of alcohol abuse and poor mental health.
Methodology: This study surveyed UTRGV students ages 18-24. To maintain the study's anonymity and provide incentive for participation, two surveys were produced. The primary survey remained completely anonymous. The optional second survey collected the participant's name, email, and phone number for a chance to win one of three $25 gift cards at the end of the study.
The participants' personal identifiers in the second survey cannot be linked to any of the first survey's responses, thus maintaining the anonymity of the main study. The survey was distributed via student listservs, social media pages, flyer postings, and in-person solicitation. The survey questions stemmed from four validated, psychometric scales including the 9-item Patient Health Questionnaire, 7-item Generalized Anxiety Questionnaire, Alcohol Use Disorders Identification Test (AUDIT), and the Brief Young Adult Alcohol Consequences Questionnaire. Descriptive outcomes, frequencies and percentages, T-tests, and Chi-square tests were utilized for sufficient data analysis and visualization.
Results: 135 student responses were reported. According to the psychometric scales, a significant number of students indicated moderate and severe levels of depression and anxiety. Furthermore, 71% of students reported partaking in hazardous drinking, with 32% engaging in binge drinking. A strong relationship ($p < 0.001$) between negative consequences and the amount of drinking was found. Despite these findings, no significant trends were observed between hazardous drinking and levels of anxiety ($p = 0.51$) or depression ($p = 0.37$) in students.
Conclusion: Our results strengthen previous understanding that young adults of the Rio Grande Valley have significant levels of alcohol consumption and negative mental health symptoms. Together, these concerns might pose serious challenges to the quality of life for RGV residents. Educating our community and its healthcare workers on the prevalence of hazardous drinking and negative health symptoms is vital for long-term public health management.

CARF expression-based screening of steatosis-modulating compounds

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Introduction: Steatosis, excessive accumulation of fat in liver, is a stressed state of liver caused by various factors such as obesity, diabetes, alcohol consumption, certain medications and non-alcoholic fatty liver disease. While it is generally considered a benign condition, prolonged steatosis often progresses to serious liver diseases including liver fibrosis, nonalcoholic steatohepatitis and hepatocarcinoma. Whereas drug development is expensive and long process, anti-steatosis natural compounds are anticipated to be useful for management of this condition and prevent its progress to complicated lethal pathologies. CARF protein has been shown to play a key role in regulating the cellular response to stress. It has been shown to control the fate of cells to apoptosis, senescence and malignant transformation by its low, high and super-high levels, respectively. Most recently it has been shown that CARF expression may serve as a quantitative marker for stress response [1,2].
Methods: We used CARF expression screening in liver-derived cells (HepG2) as an assay to select compounds with steatosis-modulating activity. Cells were treated with Free Fatty Acid (FFA) and analyzed for expression of CARF by Western blotting and immunocytostaining by specific antibodies raised in our laboratory. In parallel assays, cells were subjected to Nile Red (NR) staining. We also used an additional marker Mortalin that has been shown to regulate liver fibrosis, HCC and its recurrence.
Results: HepG2 cells treated with non toxic concentration of FFA showed downregulation of CARF suggesting its role in lipid metabolism in line with a recent report [3]. We investigated if this phenomenon could be used as an assay system to screen anti-steatosis compounds. FFA-treated HepG2 cells were subjected 30 small molecules. Expression analysis of CARF revealed modulation of CARF expression with ~18 out of 30 compounds. Parrallel analyses of cells for accumulation of FFA by NR staining showed its decrease cells treated with ~14/18 compounds. Several of these compounds showed similar structure and belonged to withanolide class of phytochemicals. Furthermore, crude extracts from Ashwagandha containing mixture of these withanolides showed remarkable response suggesting use of CARF expression as a reliable reporter assay for anti-steatosis compound screening. Such compounds may offer a convenient and economic way to manage steaosis and related liver pathologies.
Conclusion: CARF-expression based screening of a small number of natural compounds led to identification of candidate steatosis-modulating compounds and warrant further molecular analyses.

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Keywords: CARF, HepG2, Steatosis, Withanolides, Ashwagandha.

Differences in female reproductive cycles dependent on age and the effects on short term memory in the Syrian hamster (Mesocricetus auratus)

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The female reproductive system plays an important role in cognitive function, and the status of it affects memory and many other health issues, including mental. For this reason, it is important to continue studying its effects by using as a model, the female Syrian hamster. Like the human female menstrual cycle, the female hamster has shown inconsistencies in their cycles and changes in it as they age. The female hamsters' estrus cycle consists of a 4-day cycle. Dr. Orsini's protocol focusing on vaginal secretion, published in 1961, describes day 1 discharge of the cycle as translucent (TS), day 2 as proestrus (PO), day 3 as a waxy plug (WP), and day 4 as negative (NEG). Using Dr. Orsini's (1961) protocol and findings, we cycled three different aged cohorts, at different time points, for one year, to test the hypothesis that there are differences in the patterns of the estrous cycle and the effect of age. Over a 29-day period the older hamsters were in TS on average 3.2 days (standard error = 0.337); in PO 4.55 days (SE= 0.344); in WP 2.65 days (SE= 0.365); and in NEG 14.1 days (SE= 0.566). Over a 29-day period the middle-aged hamsters were in TS on average 3.7 days (SE= 0.528); in PO 4.19 days (SE= .0.473); in WP 3.57 days (SE= 0.415); and in NEG 13.5 days (SE= 0.695). Over a 29-day period the youngest aged hamsters were in TS on average 3.2 days (SE= 0.432); in PO 5.4 days (SE= 0.343); in WP 3.15 days (SE= 0.378); and in NEG 13.25 days (SE=0.721). Results support our hypothesis that there are differences in the pattern of the female cycle dependent on age. Next, we will conduct an experiment with a 4-stage protocol to investigate short term memory, and if there is an effect on it dependent on the female hamster's day of the cycle and the age. We hypothesize that the younger female hamsters will have better memory of the exposed odor than the older and middle-aged hamsters. We will test our hypothesis that the day of the estrus cycle is a factor in short term memory by using a repeated measures approach. We also plan to determine how each stage of their cycle affects them during experiments versus male hamsters. Female hamsters will be tested in the same protocol at different days of the cycle and data will be collected in Anymaze. Data collected will be analyzed using SPSS and results will be presented at the symposium.

Effect of miR-660-5p in breast cancer progression

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Background: Breast cancer (BC) is the most diagnosed cancer in women worldwide. MicroRNAs (miRNAs) participate in different processes of BC and their deregulation can cause them to act as oncogenes or tumor suppressors, participating in cancer progression. Using the TCGA (The Cancer Genome Atlas) database, we found that miR-660-5p significantly overexpressed and associated with poor survival in patients with this pathology. Moreover, it is reported that miR-660-5p can induce BC progression through transcription factor CP2 (TFCP2) and the downregulation of tet methylcytosine dioxygenase 2 (TET2). In this project, we propose to identify the role of miR660-5p in proliferation, migration, invasion, angiogenesis, and the possible targets involved in these processes in BC cell lines.
Methods: Basal levels of miR-660-5p were determined in BC cells MDA-MB-231 and MCF-7, and in human epithelial breast cells MCF-10A by RT-qPCR. The effect of miR-660-5p was evaluated on proliferation, migration, and invasion processes in MDA-MB-231 and MCF-7 cells. HUVEC cells were used to assess angiogenesis. All cell lines were transfected with miR-660-5p inhibitor. Analysis of nine miRNA-target prediction databases was made to identify targets of miR-660-5p. We selected the targets genes predicted by at least three of these programs, and their expression were evaluated in MDA-MB-231 cells by RT-qPCR in a customized plate. We validated those results with Western blot.
Results: We found that miR-660-5p is significantly upregulated in MDA-MB-231 and MCF-7, compared to MCF-10A cells. In addition, we observed a significant decrease in proliferation, migration, and invasion in BC cells transfected with miR-660-5p inhibitor, compared to nontreated cells and miRNA inhibitor negative control cells. Similarly, we observed a significant decrease in angiogenesis of HUVEC cells transfected with miR-660-5p inhibitor. Furthermore, of all the miR660-5p target genes identified by prediction databases, 17 were selected, and of these, three were observed upregulated and one downregulated. We found that CD8A, LIFR and TMEM41B are reported as tumor suppressors in different types of cancer. We validated those results by Western blot, observing an increase in TMEM41B protein levels in the group of cells transfected with miR660 inhibitor compared to nontreated cells and miRNA inhibitor negative control cells.
Conclusions: The results show that miR-660-5p is upregulated and involved in proliferation, migration, invasion, and angiogenesis of BC, which may lead us to suggest that this miRNA act as an onco-miRNA. In addition, we found that TMEM41B could be a potential target of miR-660-5p.

Functional effect of miR-1307-3p on breast cancer progression

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Background: MiRNAs are non-coding RNA molecules and its function is the regulation of gene expression. In cancer, the deregulation of miRNAs allows them to act as oncogenes or tumor suppressors. From an analysis of the expression of miRNAs in breast cancer (BC) in The Cancer Genome Atlas (TCGA), it was identified that miR-1307-3p is significantly overexpressed in the tumor tissue compared to healthy tissue from patients. So far, in BC, it has only been reported that this miRNA inhibits SMYD4 and that it is involved in resistance to cisplatin through its effect on Mdm4. In this project we propose to identify the role of miR1307-3p in proliferation, migration, invasion, angiogenesis, and possible targets involved in these processes in BC cells.
Methods: RT-qPCR was used to evaluate basal levels of miR-1307-3p in the BC cell lines MDA-MB-231 and MCF-7, and the human epithelial breast MCF-10A cells. Later, we determined the effect of miR-1307-3p on proliferation, migration, and invasion in MDA-MB231 and MCF-7, and angiogenesis in the HUVEC endothelial cells. All assays were carried out using the miR-1307-3p inhibitor. Then, nine miRNA-target prediction databases were analyzed to identify potential miR-1307-3p target genes, and their expression was analyzed by RT-qPCR in a designed 384-well plate. Finally, the targets that presented an alteration in their expression were evaluated by western blot.
Results: We found that miR-1307-3p is overexpressed in MDA-MB-231 and MCF-7, compared to MCF-10A cells. We also identified that transfection with the miR-1307-3p inhibitor causes a significant decrease in the processes of proliferation, migration, invasion, and angiogenesis, when compared with untreated or negative control transfected cells. For its part, prediction databases analysis allowed us to identify 19 potential targets of miR1307-3p. We also found that 2 genes were overexpressed, CIC and PRM2. Finally, we found an overexpression of PRM2 protein.
Conclusions: MiR-1307-3p is overexpressed in BC cells. Furthermore, miR-1307-3p induces the processes of proliferation, migration and invasion in BC cells, and angiogenesis in HUVEC cells. These observations suggest that miR-1307-3p can acts as an onco-miRNA. In addition, a potential new target of miR-1307-3p was found, PRM2 which has not been previously reported in breast cancer. Further analysis to verify and validate the implication of this miR-1307-3p target are needed to understand its importance in BC.

IMPACTS OF WORK ENVIRONMENT ON HEALTH STATUS OF TRAFFIC COMPLIANCE AND ENFORCEMENT CORPS MEMBERS IN OGUN STATE. NIGERIA

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Background: Traffic Compliance and Enforcement (TRACE) Corps members in Nigeria are occupationally exposed to lots of environmental pollutants due to essential services that they render in the transport industry. Exposure to environmental pollutants has been shown to contribute to the pathogenesis and progression of cardiovascular diseases (CVD). Information about biochemical end points of CVD in Traffic Compliance and Enforcement (TRACE) Corps members who are occupationally exposed to environmental pollutants is lacking. This study therefore investigated the effects of these environmental pollutants on some indices of CVD.
Methods: Before enrollment in the study, all subjects, including controls, were informed about the objectives and requirements of the study, as well as the risks and discomfort that might be involved in participating in the study. After this exercise, a total of 234 subjects consented to participate in the study. TRACE (n=195) in various zones in Ogun State. Staff and students at Federal University of Agriculture, Abeokuta (FUNAAB) served as control subjects (n=39). A careful history of their dietary habits and job experience, as well as a detailed history of their occupational habit, was taken. Anthropometric and clinical parameters were assessed using standard methods while biochemical indices of CVD were determined spectrophotometrically using commercial diagnostic kits. One-way analysis of variance (ANOVA) followed by Duncan test was used to analyze the results with $p<0.05$ considered significant. The relationships between plasma lipids and the anthropometric parameters were also analyzed using Pearson correlations.

Results: Results showed that the systolic blood pressure in both male and female TRACE subjects were significantly higher than the control subjects. The diastolic blood pressure remained the same in both the control and TRACE subjects. The pulse in the TRACE male subject was significantly lower than the control subject. The body mass index (BMI), waist circumference and hip circumference of the TRACE female were significantly higher than the control subjects. The umbilical cord circumference of the TRACE male and female subjects were significantly higher than their control counterpart. Plasma Cholesterol in TRACE male was higher than the control male while the plasma cholesterol was lower in TRACE female compared to the control female. Plasma triacylglycerol and phospholipid remain the same in all subjects. HDL cholesterol in the TRACE subjects were 65% and 71% of the control male and control female respectively. Plasma arylesterase in TRACE male and female subjects were both 1.39 times lower than their control counterparts. There was also a significant positive correlation between the plasma cholesterol and weight ($r = 0.130$; $p = 0.047$), plasma cholesterol and BMI ($r = 0.157$; $p = 0.021$), Plasma triacylglycerol and Pulse ($r = 0.130$; $p = 0.048$). The average traffic density was 37 vehicles/min in the sampled TRACE zones.
Conclusion: Findings such as increase in systolic blood pressure, anthropometric parameters and lower HDL cholesterol, plasma arylesterase in the TRACE subjects compared to the control from this study indicates that environmental pollutant exposure may disrupt lipid homeostasis and predisposes the TRACE subjects to development of CVD.

IN VITRO MURINE LYMPHOMA L5178Y-R CELLS GROWTH INHIBITION BY ENDOPHYTIC FUNGI ISOLATED FROM _Lophocereus marginatus_

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Background: Chemotherapy is one of the main treatments to fight cancer. However, about 90% of failures in this procedure are due to the invasion and metastasis of drug-resistant cancer cells. Therefore, the search for new drugs has become critical in oncology. Endophytic fungi, as important sources of bioactive compounds, represent an alternative for the isolation, characterization, and development of new pharmacological treatments for cancer control. The aim of the present study was to evaluate the cytotoxic activity of liquid culture extracts of endophytic fungi isolated from *Lophocereus marginatus* against murine lymphoma L5178Y-R cells.
Methods: Endophytic fungi obtained from *L. marginatus* stems were isolated and morphologically characterized. Aqueous, methanolic, and ethyl acetate extracts were obtained from fungal liquid cultures. To evaluate the anticancer activity, we used tumor L5178Y-R cells and control peripheral blood mononuclear cells (PBMCs). Extracts were evaluated at 250 and 25 µg/mL and 250 µg/mL, using the 3-[4,5-dimethylthiazol-2-yl]-2,5-diphenyltetrazoliumbromide) colorimetric reduction assay to determine cytotoxicity. Vincristine and 1% DMSO were used as positive and negative controls, respectively. The IC_{50} value and selectivity index (SI) were determined only for the extracts that presented the highest antitumor activity. These isolates were molecularly identified from sequencing of the spacer region of the ribosomal DNA internal transcript (ITS). A metabolite production curve was performed with selected isolates to determine the time of the highest antitumor activity.
Results: Ten endophytic fungi from *L. marginatus* were isolated and morphologically characterized. Results showed that aqueous extracts presented lower lymphoma cells growth inhibition (< 50%) at the highest concentration evaluated (250 µg/mL), as compared with ethyl acetate and methanolic extracts, which showed up to 93.4% and 94.3% cells growth inhibition, respectively. Ten extracts with > 80% tumor cells growth inhibition were selected and evaluated at 250 µg/mL on PBMCs viability. Extracts showing less than 50% cytotoxicity to PBMCs were selected and IC_{50} and IS were determined. Strain PME-H005 presented the highest toxicity against L5178Y-R cells and the highest SI with IC_{50} of 39.7 µg/mL and IS > 6.2, as compared with PBMCs. Four isolates that showed the highest antitumor activity were molecularly identified, corresponding to the species *Penicillium citrinum*, *Aspergillus versicolor*, *Metarhizium anisopliae,* and *Cladosporium sp*. When performing the metabolite production curve, it was observed that only *A. versicolor* PME-H005 and *M. anisopliae* PME-H007 strains retained antitumor activity, where the ethyl acetate extracts showed the highest activity with IC_{50} values of 23.2 µg/ mL (28 d) for the PME-H005 strain and 2.7 µg/mL (21 d) for PME-H007.
Conclusions: *A. versicolor* PME-H005 and *M. anisopliae* PME-H007 strains extracts showed significant antitumor activity against L5178Y-R lymphoma cells. Further research is required to characterize bioactive compounds responsible for this activity.

Performance of color plates for _M. tuberculosis_ detection and drug resistance screening in Mexican TB clinics across the Texas border

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Purpose: Populations along the U.S.-Mexico border have a high prevalence of risk factors for TB such as low socioeconomic status, overcrowding and migration, and consequently, higher TB incidence (up to 12 and 44/100,000) when compared to their corresponding national averages in each country. TB control in border regions is further challenged by limited access to cost-effective tests to diagnose TB and assess drug resistance (DR). We evaluated the performance of a novel, simple and low-cost culture plate technology for isolation and DR testing of *Mtb* in TB clinics on the Mexican border with Texas.

Methods. We conducted an observational study using sputum from 85 subjects with possible TB identified in TB clinics in Reynosa and Matamoros, Mexico. Their fresh sputa were prospectively digested and decontaminated using standard NaOH-NALC and evaluated for acid-fast bacilli (AFB) in smears or *Mtb* growth in LJ slants (routine). For the experimental arm we inoculated 1st , 2nd or 3rd generation plates (1, 2 or 3G plates) with thawed leftover sputa already treated with NaOH-NALC or fresh sputa treated with a described mix of salts for digestion and decontamination. The performance of both culture methods was compared for *Mtb* isolation. The 1G plates were previously validated for assessment of drug resistance, and hence, used here to identify resistance to isoniazid (INH) or rifampicin (RIF).
Results. The plates had a 100% sensitivity and >90% PPV when compared to AFB smears or LJ cultures. Contamination was 1.4% for plates and 12.7% for LJ cultures. Median time-to-positive was 17 days for plates and 63 days for LJ. Resistance per 1G plates was 17.6% to any drug, 14.9% to INH, 9.5% to RIF, and 6.8% to both combined (multi-drug resistant TB).
Conclusions. The plates were as sensitive as reference methods, had less contamination and shorter times for *Mtb* growth detection. The 1G plate costs less than $5US and provides DR results for three drugs, when compared to local costs of $100 for single RIF-resistance testing with GeneXpert. DR is likely underestimated in the Mexican border clinics where official estimates are ~6% and our findings suggest 3-fold higher rates. Implementation studies for the plates are warranted in Mexican border clinics and other TB endemic regions worldwide where resources are limited.

Prevalence of anxiety and depression in young people from northern Tamaulipas, in the context of the COVID-19 pandemic
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Background. From the beginning of the confinement due to the Covid-19 pandemic, the prevalence of depression was >22%, while ENSANUT 2018 survey reported a prevalence of 13.6%. The pandemic had an adverse impact on young people, affecting employment, their professional future, education, training and, therefore, their mental well-being. Early studies show that young people have higher levels of anxiety and depression than adults and older adults.
Methods. We evaluated the impact of the COVID-19 pandemic on the mental health of students from the upper secondary and higher education levels of northern Tamaulipas, Mexico, measuring the prevalence of anxiety and depression with the goal of adopt early and timely diagnosis, prevention, and management strategies. This study was descriptive, observational, cross-sectional, and prospective with non-probabilistic sampling of volunteers (N = 576). Two instruments were applied, one to assess anxiety-depression (the 'Montgomery-Asberg Depression Rating Scale', MADRS) and the Patient's Mental Health Questionnaire (PHQ-9). The two formats were structured on the Google Forms© Platform (https://docs.google.com/forms) and, which also included questions about the age, municipality of residence and type of study and/or work of each participant.
Results. Most of participants in this study were from the municipalities of Miguel Aleman (48%), Camargo (16%), Ciudad Mier (10%) and Gustavo Díaz Ordaz (4%); the rest came from other municipalities and states of Mexico. Most of young people do work (44%), the rest only study (31%) or study/work (25%). The 87% of participants were between 16 - 25 years old. Both instruments generally identified similar response patterns. The PHQ-9 instrument mainly identified null or mild anxiety-depression (85%); while with MADRS it was 66%. The highest percentages of anxiety-depression were detected with the MADRS instrument (72%), compared to the PHQ-9 (34%). With both instruments, serious severity of 5-6% was identified, and 14 young people (2.4%) showed explicit suicidal tendencies. Mild, moderate, and serious (severe) anxiety-depression levels were detected in people under 25 years-old (71%); in people who study and study/work (76%); and participants from Camargo (80%).
Conclusions. The study indicated the presence of mild to serious (severe) anxiety-depression in a significant percentage of young residents of northern Tamaulipas. The identification of young people with explicit suicidal tendencies stands out. The MADRS instrument was more accurate in identifying youth with anxiety-depression problems compared to the PHQ-9. Results indicated the need to develop urgent diagnostic, care and timely prevention measures to address the mental health problems of young people in this region of Mexico.

Pulmonary Tuberculosis in Older Adults, Texas, 2008 – 2020: Trends and adverse outcomes
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Background: After two decades of 2% annual declines in the global incidence of TB, there was a 3.6% increase between 2020 and 2021. The World Health Organization's (WHO) 'End TB Strategy' is aimed at reducing TB incidence by 80% and TB deaths by 90% by 2030, compared with 2015, but its goals will not be reached at the current pace. Reacceleration of TB elimination efforts must take into consideration the changing epidemiology of TB, including an aging global population. The older adult population, aged 65 and older, is growing faster than all other age groups, and in the United States, they will outnumber children under the age of 18 for the first time by 2034. Older adults have the highest prevalence of latent TB and are prone to immune-suppressive conditions that predispose them to reactivation or new TB infection. In this study, we aimed to examine sociodemographics and clinical findings unique to older patients, when compared to younger adults, with pulmonary TB (PTB) and identify risk factors that predict adverse PTB outcomes in this age group.

Methods: Pulmonary TB surveillance data from Texas, 2008 – 2020 (n=10,656), was evaluated for patient characteristics, outcomes, and trends in older (OA, ≥65 y.) vs. young (YA, 18 to 39 y.) or middle-aged (MAA, 40 to 64 y.) adults. Multivariable logistic regression models were used to identify risk factors for treatment noncompletion and all-cause death.
Results: The OA group grew from 15% in 2008 to 24% in 2020 with the proportion of OA patients born in a country other than the U.S. or Mexico, also increasing during the surveillance period, trend P < .001. Long-term care facility residence, diabetes, and dead at diagnosis increased with age (P for trend < .001 for each) while cavities on chest x-ray and performing TB infection tests, tuberculin skin test (TST) or interferon-gamma release assays (IGRAs), decreased with age (P for trend < .001 for each). Older age was not associated with failure to complete TB treatment. However, birth in a country other than the U.S. or Mexico (aOR 2.27, 95% CI 1.27, 4.08) and homeless (aOR 4.33, 95% CI 1.63, 11.53) were associated with treatment noncompletion in the OA. The odds of death during TB treatment doubled for OA patients with an MTB positive culture (aOR 2.31, 95% CI 1.55, 3.44), while birth in Mexico (aOR 0.74, 95% CI 0.56, 0.99) or other country other than the U.S. or Mexico (aOR 0.48, 95% CI 0.33, 0.68) was protective against death.
Conclusion: In Texas, there has been an increase in the proportion of older adults with TB over the past decade and this age group is at higher risk of all-cause mortality. We recommend including older adults as a priority group in latent TB treatment guidelines to prevent the development of TB in this highly-vulnerable age group.

Risk factors for arterial hypertension in high school students from Miguel Aleman and Gustavo Díaz Ordaz, Tamaulipas, Mexico

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Background. Although arterial hypertension (AHT) in adolescents is not an important cause of morbidity and mortality, it is a public health problem that is rapidly increasing in Mexico, due to changes in lifestyle and diet that generate overweight and obesity in the population and will later impact significantly in adulthood. The earlier AHT develops the risk of acute myocardial infarctions, cerebrovascular accidents; then disabilities should be increased. These conditions have repercussions at social and economic levels.
Methods. Observational, descriptive, and cross-sectional study in students of the CBTIS 220 of Gustavo Díaz Ordaz (N = 423; women = 190, men = 233); and CBTIS 125 from Miguel Aleman (N = 463; women = 260, men = 203), Tamaulipas, Mexico. Gender, age, grade, and technical specialty were recorded. Then, resting systolic and diastolic blood pressure were registered, as well as weight, height, and waist circumference. With the latter, the body mass index and the waist contour/height ratio were calculated.
Results. The average BMI was 24.6 in women and 24.0 in men. 85% of the students reported between 15 and 17 years of age, where 50.8% were; women and 49.2% were men. The overweight/obesity prevalence was 35.6% according to the BMI and 35.8% according to the ICT. Although high blood pressure prevalence was similar between schools (31.7% in Miguel Aleman and 30.7% in Gustavo Díaz Ordaz), AHT grade I and II was higher in Miguel Aleman (13.2%) than in Gustavo Díaz Ordaz (11.3%). The highest percentages of elevated blood pressure and hypertension were observed in men. In both schools, the risk factors associated with elevated blood pressure and hypertension were being a man (OR=2.57 and 2.41, p<0.009, in Miguel Aleman and Gustavo Diaz Ordaz, respectively); suffering from overweight/obesity (OR=4.29, 11.21, p<0.001); having a TBI associated with overweight/obesity (OR=3.78, 3.38, p<0.001). The follow-up of the students who in the base sample were identified with some degree of AHT indicated few changes on the reduction of hypertensives.
Conclusions. The prevalence of high blood pressure was from 30.7 to 31.7% and hypertension was observed between 11.3 and 13.2% of the students. The risk factors for elevated blood pressure/hypertension were being a man and being overweight/obese. High blood pressure and hypertension were associated with being overweight/obese due a sedentary lifestyle and the consumption of sports supplements, energy drinks and cola and/or coffee.

Sudden cardiac death due to pharmacological cardioversion of atrial fibrillation

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Introduction: Atrial fibrillation (AF) is the most common cardiac arrhythmia. The global prevalence of AF is 0.51% of the world population (37.5 million people) and has increased 33% in the last 20 years. AF may be associated with increased risk of sudden cardiac death (SCD); as well as ischemic stroke or coagulopathies. Coronary heart disease and heart failure are the two most common substrates of SCD. Therefore, the relationship between AFand SCD is particularly difficult to address. AF may have a shared molecular basis with ventricular fibrillation (VF; the most common arrhythmia underlying SCD), as both involve cellular and ion channel abnormalities, respectively, at the atrial and ventricular levels.
Presentation of the case: 83-year-old woman, hypertensive, reports asthenia, adynamia and insomnia (21 days); the resting 12-lead electrocardiogram did not report ischemia or necrosis, AF was diagnosed; 160 beats per minute (BPM) (Figure 1). The transthoracic echocardiogram did not show thrombi or effusion; preserved ejection fraction. Pharmacological cardioversion (PC) of AF was performed with oral acetylsalicylic acid 100 mg every 24 h indefinitely; digoxin 0.25 mg orally every 8 hours for 24 hours (impregnation) and 0.25 mg orally every 24 hours (maintenance). After administration of the second dose of digoxin, HOLTER electrocardiographic monitoring detected sustained supraventricular tachycardia.

Conclusions: VF caused SCD; the SCD prevented the administration of the third dose of digoxin. Amioradone was not indicated due to age and lack of ventricular response (VR) in AF; its use could prevent VF and SCD. VF is the rhythm that most causes SCD. 70% of SCD are due to coronary disease and, in 40% of SCD, it may be the initial manifestation of coronary disease. Arrhythmias such as VF, in this case, can cause acute ischemia (AI) and subsequently SCD. In cases of AF with VR, low output, and hypotension, electrical cardioversion (EC) is recommended. The PC of the arrhythmia depends on the severity and response of AF, age, ventricular function; atrial size; previous treatments. Cardioversion (PC/EC) is not recommended in elderly people with a history of multiple AF recurrences. According to the European Society of Cardiology and the American College of Cardiology/American Heart Association, the AF was persistent, long-lasting, and noncardioreversible. Coronary heart disease was not observed. The VF probably caused the AI and, in turn, the AI caused the SCD without the patient reviving. No cardiomyopathies, Brugada syndrome, or coronary heart disease were observed in this case. Due to lack of resources to carry out a genetic study, the presence of single nucleotide polymorphisms associated with cardiac arrhythmias or AF in genes such as SCN5A (rs1805126) and SCN10A (rs6795970), whichencoding a subunit of the voltage-gated sodium channel.

The mechanisms of N-Acetylcysteine protect against cobalt chloride induced 661W Cone Photoreceptor cell toxicity.
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Abstract
Purpose: Proliferative diabetic retinopathy (PDR) is the leading cause of blindness due to the apoptotic death of the photoreceptors among working age adults. Photoreceptors are the most common and metabolically demanding cells inl the retina thus oxygen is vital for retinal function. Hypoxia induced metabolic stress leads to photoreceptor atrophy and retinopathy. However, the protection of hypoxia-induced cytotoxicity in cone photoreceptor cells has not been investigated extensively. The aim of the present study was to further characterize the biochemical changes in cultured 661W photoreceptor cells during hypoxic exposure and to investigate the protective mechanisms of N-acetyl cysteine (NAC) against hypoxia-induced cytotoxicity.
Methods: 661W were cultured at 5% CO2 at 37˚C in DMEM with 10% FBS, 1% a penicillin/streptomycin. Cobalt (II) Chloride hexahydrate (CoCl2) was used to induce hypoxia. NAC was dissolved in H20 and diluted in the culture medium. For protection assay, pretreated cells with either 3 or 4mM NAC for 2 hours followed by addition of either 400 or 500µm CoCl2 for 24 hours. Cell viability was determined by MTT assay in a 96 well plate. Morphological changes of the cells were observed and photographed under phase-contrast microscope and the levels of protein expression was measured by Western blot analysis. Statistical analysis was undertaken using independent two-tailed Students t-test using SPSS Statistics software.
Results: Treatment with CoCl2 significantly inhibited 661W cell proliferation, reduced cell viability, and induced apoptotic protein expression, including PARP cleavage, and caspase 3 activation. These effects, including inhibition of cell proliferations and disruption of cell morphology, were significantly reversed by NAC treatment. In addition, CoCl2 treatment led to protein ubiquitination, activation of autophagy and MAPK/ERK pathways in the 661W cells. Autophagy inhibitor 3-Methyladenine (3-MA) eliminated NAC protection against hypoxia induced cell damage. Interestingly, NAC was found to strengthen CoCl2 induced Hif1a expression and protein ubiquitination without changing its protective effect on CoCl2 induced cell apoptosis and damage.
Conclusions: Hypoxia induced hypoxia-inducible factor-1a (HIF-1a) expression, significant apoptosis, and protein ubiquitination in 661W cone photoreceptors. Moreover, hypoxia also activated autophagy and upregulated MAPK/ERK signaling. Our preliminary study demonstrated that the possible role of MAPK/ERK and autophagy activation at the early stages may have increased the tolerance to hypoxia for a short period. The HIF-1a expression and protein ubiquitination strengthened by combination treatment with NAC and CoCl2 remains to be determined. The Overall, NAC dramatically reversed hypoxia-induced cytotoxicity in 661W photoreceptor cells. Therefore, treatment with NAC may be a potential strategy to treat hypoxia-induced degeneration of cone photoreceptor cells.

UNDERGRADUATE STUDENT CATEGORY

An Investigation of Porous PCL Scaffolds and Osteogenic and Angiogenic Inducing miRNAs for Bone Tissue Engineering

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Background: Trauma, infection, fracture, tumor resection, disease, or congenital abnormalities can cause bone defects. Small defects can self-regenerate, but larger ones or those with poor vascularized areas require intervention. Autografts involve transferring bone from one area to the damaged site. Although considered the current gold standard for treatment, this method is associated with limitations such as pain, infection risk, rejection and difficulty in finding the correct size, shape and volume of bone needed. Bone tissue engineering may be a promising alternative which combines multipotent cells, scaffolds, and bioactive factors to induce bone regeneration. The objectives of the study were to (1) investigate the effects of porogen amount, porogen size range, and coating of polycaprolactone (PCL) scaffolds on mesenchymal stem cell (MSC) and human umbilical vein endothelial cell (HUVEC) attachment and proliferation, (2) evaluate the osteogenic and angiogenic inducing properties of three variants of miRNA-26a.
Methods: Scaffolds were manufactured using a polymer casting-porogen leaching technique. Salt particles of specific sizes were used as porogens and dispersed within a solution of PCL and dichloromethane (DCM). The resulting scaffolds were coated with either gelatin or hyaluronic acid (HA) or cell media. The scaffolds were then seeded with either MSCs or HUVECs. A 3-(4,5-dimethylthiazol-2-yl)-2,5-diphenyl tetrazolium bromide (MTT) assay was used to determine cell attachment at day 1 and cell proliferation at day 7. MSCs were cultured and transfected with either a negative control, 26a 1-3p, 26a 2-3p, or 26a 5p miRNAs using Lipofectamine. Real-time-quantification polymerase chain reaction (RT-qPCR) and immunoblotting were performed 7 days after transfection to measure mRNA and protein levels of angiogenic and osteogenic markers, respectively.
Results: At Day 7, scaffolds seeded with MSCs at 80 % porosity and with a 300-500 µm porogen size range had significantly higher cell proliferation in comparison with those at 70 % and 90 % porosity and 106- 300 µm. For HUVEC cells, there was no effect of porosity and porogen size on cell proliferation. Scaffolds coated with gelatin had significantly higher cell proliferation in comparison to HA and uncoated. MSCs transfected with 26a miRNA variants had higher levels of osteogenic markers RUNX2, ALPL, and BGLAP and angiogenic marker VEGF in comparison to the negative control with miRNA 26a 2-3p having higher levels compared to the other variants. The immunoblotting assay determined MSCs transfected with 26a miRNA variants expressed RUNX2.
Conclusions: In conclusion, we determined a scaffold at 80 % porosity, 300-500 um porogen size range, and coated with gelatin may be best suited for MSC and HUVEC attachment and proliferation. Furthermore, the three miRNA variants for miRNA-26a increased mRNA expression of osteogenic and angiogenic markers and RUNX protein levels. The utilization of tissue engineering through miRNA transfected MSCs combined with biocompatible biomaterials may serve as a promising approach for the treatment of bone defects.

APOE gene associated with dementia related traits, depression and anxiety in the Hispanic population.

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Background: Alzheimer's disease (AD) is one of the most common neurodegenerative disorders that has been associated with a strong genetic component. In addition, AD is often comorbid with neuropsychiatric conditions, some of which are early indicators of the disease. Specific demographic factors and genetic variants have been identified as risks in non-Hispanic populations; however, there are limited studies observed on the Hispanic population. Therefore, in our current study, we focused on investigating a known gene, APOE, that is associated with AD-related phenotypes and two psychiatric diseases (depression and anxiety) within the U.S. Hispanic population.
Methods: A total of 1,382 subjects were collected from the Texas Alzheimer's Research and Care Consortium (TARCC, N=1,320) and the Initial Study of Longevity and Dementia from the Rio Grande Valley (ISLD-RGV, N=62). Questionnaires for demographics, lifestyle, medical history, and blood/saliva samples were collected. We genotyped for the APOE gene based on two single nucleotide polymorphisms. Statistical analysis was performed using Chi-square tests, independent samples t-tests and multivariable logistic regression models using SPSS version 26.

Results: Current finding indicated that APOE-ε4 was associated with not only AD (p<0.0001), but also anxiety (p<0.0001) and depression (p=0.0004). However, APOE-ε3 was associated with depression (p=0.002) in the Hispanic population. We provide additional evidence in which APOE-ε4 increased the risk for AD in Hispanics.
Conclusions: For the first time, APOE alleles show increased risks for anxiety and depression in Hispanics. However, further research is warranted to confirm the current findings regarding this population.

Association Between Drug Addiction Disorders and Drug Policy. A Bibliometric Analysis.

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Background: It has been known for many years that drug addiction has been a big problem in the United States, also that in recent years the use and abuse of substances has been increasing. For example, according to the American addiction center in 2017 about 19.7 million Americans from ages 12 and older have had a problem of substance abuse, but only 11% of those actually get treatment. This is a disease, and as a nation, the United States of America, we are not offering the assistance that these children and adults require to conquer it. Genes can play a role in the development of addiction in children; for example, if both of the child's parents have a history of addiction or if one of the parents was addicted during the pregnancy, this can be passed on to the child, and it can begin to cause a desire for drugs almost immediately after birth. In the article by Yan Sun it states, “Genetic influences account for 30 to 70% of addiction vulnerability.
Methods : Academic knowledge has remained expanding exponentially. In this setting, analytical literature review can help overcome these boundaries and help with several aspects of the research process, establishing a context and delimiting the research problem; pursuing theoretical support; rationalizing the problem and steering to new lines of inquiry; bibliometric analysis is a popular and rigorous method for exploring and analyzing huge volumes of scientific data. It enables us to unpack the evolutionary shades of a specific field while shedding light on the emerging areas in that field.
Results : It is possible that it would not be such a horrible idea to actually decriminalize some opioids and to begin treating addiction as a sickness rather than a criminal infraction. This is because it is possible that it might not be such a terrible idea to really decriminalize some narcotics. For, as was also noted, there are certain medications to which young people become hooked, the reason for this is not because of their own free will but rather because of their genetic make-up. This indicates that if marijuana were to be fully legalized, there is a possibility that it would be advantageous for the country in terms of both its economy and its health. I bring this up in relation to the human body because it is a fact that many people choose to ignore, namely, that opioids are highly addictive and frequently play a role in the development of a deeper dependence on other substances.
Conclusions : Hence, perhaps as a nation we should stop viewing marijuana as a drug and start viewing it instead as a medicinal medicine. Numerous studies have demonstrated that marijuana does, in fact, assist patients in having an increase in appetite, which can make them stronger for certain therapies, and because it also causes patients to be relaxed and relieves some discomfort that they might have.

Characterization of YB1 in Hepatocellular Carcinoma Cells

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Background: The Rio Grande Valley’s demographics show that the Hispanic population demographics exceeds more than 92% in The Rio Grande Valley. Being the most prominent ethnicity. Hepatocellular carcinoma (HCC) affects the Hispanic community greatly, and many factors impact the suceptibility. In 2022, liver cancer was predicted to be the fifth and seventh major cause for mortality in both males and females, respectively. Given its fast-growing rate and its aggressiveness, it is important to study the social, cultural, and most importantly the biogenetic factors that affect the prevalence of the disease. Unfortunately, in Texas, and specifically in the RGV, its prevalence rate has increased by 36% in recent years. One of the reasons for the high mortality of HCC, is drug resistance to first line drug treatment for the disease. According to TCGA data, YBox Binding Protein 1 (YBX1) is upregulated in HCC and is part of a super family of proteins that regulates mRNA translation. Further investigation of this protein could lead to a mechanism of drug resistance in HCC.
Methods: Hepatocellular carcinoma cell line Skhep-1 will be obtained from ATCC and cultured as recommended.
Stable overexpressing and knock-down cell lines of YB1 will be generated via plasmid transfection, puromycin selection, and FACS sorting. RT-PCR and western blot will be utilized to verify the overexpression of YBX1 at the mRNA and protein level in the recombinant cell lines. The resulting cell lines will be tested for oncogenicity though phenotypic assays, such as migration, invasion, proliferation, and colony formation.

Results: Prior bioinformatic work done by the lab investigated YBX1 expression levels in the TCGA database, the structure and domain were also analysed. This protein has been reported to be linked to a worse survival rate and according to TCGA data it is overexpressed in HCC patients. The recombinant YBX1 overexpressed cells are sorted for GFP enrichment and validated via RT-PCRs and Western Blots. Preliminary data elucidates YBX1 protein overexpression has an increased proliferation, migration, invasion, and colony formation.
Conclusions: The identification of this protein is important as it is linked with a lower survival rate. Further comprehensive research has revealed that oncogenic proteins, such as YBX1, can also play roles in drug resistance. Since one of the many hurdles of treating HCC is an unfavorable interaction with first-line drugs currently utilized to treat HCC, the future direction of this research will include further investigation of YBX1 overexpression and its relation to drug resistance.

Development of an Experiential Learning Lab Activity on Skeletal Muscle Physiology in Undergraduate MD Pre-clerkship Curriculum

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Background: Experiential learning is an important part of the medical education curriculum. Our goal was to establish an experiential learning skeletal muscle physiology lab activity that would improve undergraduate MD pre-clerkship students' skill to collect muscle force measurements using a hand-held dynamometer (HHD) and understanding of core physiological concepts.
Methods: The authors developed and incorporated lab activity in the Musculoskeletal and Dermatology (MSKD) Module in the undergraduate MD pre-clerkship year 2 curriculum. Before lab sessions, students reviewed the HHD guide, watched videos on how to use a HHD to measure the force, and reviewed the Arm Angle strength data sheet. Students performed two experiments using an HHD: (1) The Elbow Flexion Experiment was used to obtain measurements of force produced by the bicep muscles at 6 different angles, and (2) the Fatigue Experiment was used to determine the effect of fatigue on hand muscle strength.
Results: Post-activity survey data demonstrated that students had the ability to utilize HHD to collect muscle force measurement and understood the muscle length-tension relationship (98.5% agree/strongly agree rate). Our laboratory design was validated as collected data demonstrated a significant decrease in pinch strength post-exercise and significant changes in overall strength following a quadratic curve with arm angle degrees.
Conclusions: The developed experiential learning lab activity provided an approach to active learning of physiological concepts and the use of HHD. The activity demonstrated medical students' understanding of skeletal muscle length-tension relationships as evidenced by students' favorable survey data to the activity incorporated into the MD curriculum.

Differential Expression of IRBP by cultured rod and cone cells in hypoxia and hyperglycemia

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Background: Interphotoreceptor-Retinoid-Binding-Protein (IRBP, RBP3) is a 124 kDa glycolipoprotein secreted by rods and cones. IRBP traffics and protects visual cycle retinoid and has significant free radical scavenging activity. Its expression is reduced in early stages of diabetes. Interestingly, an increased level of IRBP is protective against diabetic retinopathy (DR). We reported that that hypoxia increases VEGF expression by 661W cone photoreceptors in culture, suggesting a role of photoreceptors in proliferative DR (PDR) (Rodriguez et al, Arch Clin Exp. Ophthal 3:23,2021). Here, we compare hypoxia and VEGF on IRBP expression between rods and cones in high and low glucose.
Methods: Y79 (rod-like) cells were grown on laminate coated plates and then transferred to 24-well plates. Both Y79 and 661W (cone-like) cells were seeded to $5x10^4$ / 1 ml wells. Cells were treated with low (5.5 mM) and high (30 mM) glucose with 300 mM of CoCl2 (to induce hypoxia) and 10 ng/mL of VEGF for 24 hrs. ELISA determined the IRBP concentration in the conditioned media.
Results: High and low glucose treatment did not change the level of IRBP expression by 661W cells (27.3 vs 30.8 ng/ml). Also, the addition of VEGF did not result in a change in IRBP levels. However, hypoxia resulted in an increase of IRBP expression in 661W cells grown in both low and high glucose (to 119.6 ng/ml and 81.5 ng/ml). Furthermore, combined hypoxia and VEGF also resulted in an increase of IRBP level (to 123.67 ng/ml in high glucose and to 93.9 ng/ml in low glucose). Similarly high and low glucose did not change the level of IRBP in Y79 cells (31.6 vs 27.8 ng/ml). VEGF did not result in a change in IRBP level. However, hypoxia significantly reduced in IRBP levels in high glucose (to 2.02 ng/ml). Combined hypoxia and VEGF treatment also resulted in a significant reduction in IRBP level (to 11.2ng/ml) of Y79 cells in high glucose.
Conclusions: Hypoxia results in a significant increase in IRBP expression in the conditioned media of 661W grown in low and high glucose. In contrast, hypoxia reduced IRBP levels in the conditioned media of Y79 grown in high glucose. The differential expression of IRBP under conditions of hypoxia and hyperglycemia may provide insight into the observed clinical measurements of vitreal IRBP in DR.

Driscoll Children's Heart Center (DCHC): Pediatric cardiothoracic surgical outcomes in previously underserved, underrepresented Latino patients living in the Rio Grande Valley (RGV)

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Introduction:
Children are born every year with heart conditions that can range in levels of severity and differ in impact to quality of life. The Driscoll Children's Heart Center (DCHC) comprehensively cares for children with heart conditions beginning with in utero care and follow-up through adulthood. DCHC manages all different types of Cardiac Defects including Hypoplastic Left heart Syndrome, Valve Dysfunction, Single Ventricle heart disease, transposition of the great arteries, atrioventricular septal defects and tetralogy of Fallot. The DCHC quality data: low mortality and complication rates, and short length of stay (LOS) are cornerstones to driving quality improvement. The RGV, consisting of Cameron, Hidalgo, and Star Counties, has the greatest density of documented individuals living at the poverty level in the United States (US census.gov 2022).The RGV has been without a consistent, data driven regional Pediatric cardiothoracic surgical center. The goal of the DCHC is to break down every existing barrier preventing access to Pediatric CT Surgical care in the RGV, and provide data driven world class care to all families, blinded to income or socioeconomic status.
Background:
Outcomes for patients with congenital heart disease across the country are collected by the Society of Thoracic Surgeons. This database contains more than eight million patients, is updated in real time and is the gold standard for clinical registries. The Data is subdivided into five different groups depending on the level of risk: STAT 1 includes the lower risk conditions while STAT 5 is the highest. This data base allows Driscoll Heart center to benchmark their outcomes compared to national data.
Data:
Children that treated at DCHC showed a shorter length of stay, lower mortality rates and higher survival rates compared to the national average (2019-2023). Compared to the STS mortality rates of STAT 1 (low risk) to STAT 5 (high risk) heart Conditions, DCHC had mortality rates below the national average in every risk level. The average mortality rate of all patients being 1.9%, lower than the 2.7% STS mortally rate; DCHC has an overall 98.1% survival rate. Additionally, the average length of stay was lower in all levels of severity, ranging from 7 day LOS to 25.5 day LOS in the most high-risk cardiovascular cases.
Summary/ Conclusion:
DCHC cares for the smallest, youngest and highest risk patients. Out of 525 patients, 65% were either neonate or infants, compared to 50% nationally. Additionally, 50% were STAT 4 or 5, versus 35% nationally. As a result of highly specialized quality technical surgery and post-operative care, the length of stay and mortality is remarkably less than the national average. The DCHC is accomplishing its goal: providing data driven world class CT surgical care to every child of the RGV.

Examining APOE gene associated with diabetes and hypertension of the Hispanic population in the Rio Grande Valley.

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Background:
In the United States, 11.3% of the population has diabetes. Diabetes is a group of chronic health conditions that affects blood sugar uptake into cells for energy. There are different types of diabetes characterized by different pathophysiologies, with the most common being Type 1 Diabetes Mellitus where there is a total lack of insulin, and Type 2 Diabetes Mellitus where peripheral tissues become insulin resistant. Over time, these conditions can cause many different health issues that decrease the quality of life. In addition, Hispanic people are twice as likely to develop Type 2 diabetes than non-Hispanic White people. In our study, we are investigating a known gene, APOE, that directly corresponds with diabetes and hypertension in the U. S Hispanic population.
Methodology:
A total of 200 Hispanic subjects were collected from the Rio Grande Valley (N = 200).Questionnaires from demographics, lifestyles, medical history and saliva samples were collected. We genotyped for the APOE gene based on two SNPs, with statistical analysis being performed through Chi-squares tests, independent sample t-test, and multivariable logistic regression models using SPSS version.
Results:
Current findings have indicated that there is a higher index of Hispanics with diabetes (33%)and hypertension (55.7%). Preliminary findings also show that there is a higher frequency of individuals with ε3/ε3 that any of the other genotypes. In addition, APOE allele ε3 has the highest allele frequency (88.49% We are working on genetic associations of APOE gene with diabetes (33%) and hypertension currently.
Conclusion:
APOE alleles have shown increased risks of diabetes and hypertension in Hispanics. However, further research is needed to confirm our current findings for this specific population

GABA Expression in the Monodelphis Domestica and Relevance to Neuropsychiatric and Neurological Disorders

Keywords : Neurological disorders, Epilepsy, GAD67, GAD65, GABA

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Brief Description: The purpose of this study is to quantify and analyze the expression of GABA Neurons in thebrain of the
Background/ Purpose: Gamma-aminobutyric acid (GABA) is an amino acid that serves as the central nervous system's(CNS) main inhibitory neurotransmitter. By preventing nerve transmission, it works to lower neuronal excitability. Altered GABA levels have been associated with a variety of psychiatric disorders for example Epilepsies, Parkinson's Disease and Schizophrenia. However, it is also imperative to study the role GABA transmission relates with drug addiction and substance disorders including alcohol misuse. GABAergic neurons can be identified and quantified using antibodies that target GAD65 and GAD67. GAD65 is mostly abundant in axon terminals and is linked to synaptic vesicles while GAD67 is found throughout the cytoplasm, with a greater concentration in cell bodies. The purpose of this study is to quantify and analyze the expression of GAD65 and GAD67 in the brain of the Monodelphis Domestica.
Methods: A female Monodelphis Domestica was transcardially perfused with 4% paraformaldehyde and sliced at a thickness of 35 µm. Two antibodies for Glutamic acid decarboxylase (GAD65 and GAD67) were used to identify GABAergic neurons, following the ABC-DAB method of immunohistochemistry. The criteria for identifying GAD-positive neurons include presence of a dark brown reaction within the perikaryal cytoplasm. Using Image J software and stereological methods, midbrain sections were used to compare the number of cells between different sections.
Results: GAD67 and GAD65 are both used to identify GABAergic neurons. GAD65 neurons resembled a network of axon fibers, in contrast to GAD67neurons, which had a more clearly defined cell body and nucleus. Based on preliminary quantification of GAD67, there were 161 neurons in the dorsomedial periaqueductal gray nucleus (DMPAG) and 200 neurons in the dorsal tuberomammillary (DTM) nucleus. In the DTM region, there were 1.37 neurons per 2500µm2, while in the DMPAG region there were 0.73 neurons per 2500µm2. The expression of GAD67 neurons in the DMPAG were more dispersed but were larger in comparison to the neurons in the DTM. The mean intensities for GAD65 and GAD67 differed significantly in the SNR/SNCD area. GAD67 neurons showed a generally higher intensity than GAD65 neurons.
Conclusion: Our findings support the relevant literature regarding the way by which GAD67 and GAD65 are expressed. By assessing the expression of GABA neurons in various regions of the brain, our recent findings will contribute to the use of the Monodelphis as a model for neurological illnesses. Present-day epilepsy models including genetically epilepsy prone rats showed greater numbers of small, GABAergic neurons in comparison to Sprague-Dawley rats in the central nucleus of the inferior colliculus suggesting a deficiency in GABAergic transmission. We are currently assessing GABAergic neurons, using stereological methods, in the midbrain of the Monodelphis in response to an external stimulation, such as a visual or social stimulus. We plato relate these findings to the pathophysiology of Epilepsy, Parkinson's Disease, Schizophrenia, drug addiction, substance use disorder, and emotional disturbances.

Investigating the Ability of FOXO Factors to Regulate the NOTCH Pathway

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Background: Initial studies show that forkhead box (FOXO) transcription factors support maintenance in embryonic, hematogenic, and neural stem cells. Myoblasts, embryonic precursors of myocytes, are essential for forming and maintaining skeletal muscle tissue, which can fuse to form with multinucleated myotubes. In the presence of activated PI3K-AKT pathway, FOXO factors are inactive in muscle and liver cells; however, this regulatory mechanism is bypassed in stem/stem-like cells. FOXO factors directly interact with stem-related genes like *OCT4* and *SOX2*, facilitating their expression. Nevertheless, our understanding of the full range and conservation of FOXO transcription factor function in stem cell environments remains incomplete, leaving gaps in our knowledge. To address this, we adopted a genetic approach to uncover novel roles of FOXO factors in U87MG GBM cells, where previous research has demonstrated their ability to induce the expression of stem genes. By utilizing CRISPR Cas9 genome editing and RNA Seq analysis, we disrupted *FOXO4* and identified new target genes, respectively. Our findings indicate that FOXO factors significantly enhance the expression of *NOTCH1* and *NOTCH3* genes in C2C12 myoblast cells. Based on this, we propose to examine whether FOXO factors redundantly contribute to the activation of the NOTCH pathway in stem or stem-like contexts such as GBM and myoblasts, influencing the fate of the cells.
Methods: To test this hypothesis, we propose to examine the ability of FOXO –1, -3, and –4 to promote the NOTCH pathway gene expression and myoblast stem cell fate. We will examine the differential expression levels of NOTCH Pathway genes and the correlation between FOXO factors and myoblast formation.

Results: The anticipated results of these procedures will be identifying NOTCH Pathway target genes regulated by FOXO transcription factors to elucidate their roles in myogenesis.
Conclusion: We conclude that delineating the roles of FOXO –1, -3, and –4 transcription factors in NOTCH Pathway regulation will help address how they drive stem cell phenotypes in myoblasts and other settings.

Investigating the behavioral effects of microinjecting hormones into the brain of the Syrian hamster (Mesocricetus auratus)

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Background: Hormones are important modulators of physiological functions, behaviors, emotions, and cognition; however, most neuroscientists focus on neurotransmitters and how these chemicals affect the brain and behavioral outcomes. Studies have shown that arginine-vasopressin (AVP), a hormone that is typically known for its regulation of kidney function, microinjected in the anterior hypothalamus (AHA) induces flank marking and aggressive behaviors in Syrian hamsters (Mesocricetus auratus). In the present study, we investigated the behavioral effects of two hormones, AVP and angiotensin, microinjected into the interfascicular nucleus (IF) and the bed nucleus stria terminalis (BNST), respectively, in the Syrian hamster.
Methods: Eleven hamsters (8 males, 3 females) were cannulated using stereotaxic surgeries. Seven days post-surgery, 10 hamsters (8 males, 2 females) were microinjected with 200nL of AVP, and 1 female was injected with 200nL of Angiotensin. Hamsters were also microinjected with 200nL of normal saline, which served as the control condition. Following microinjections, hamsters were placed in an apparatus and recorded using ANY-maze software for behavior observation. After finishing behavior observation, animals were anesthetized, and brains extracted. Brains were placed in 10% Formalin and later moved into 30% sucrose solution. Brains were then sliced using a cryostat and mounted onto microscope slides. Tissues were stained with toluidine blue to facilitate identification of cannula placement.
Results: Six out of the 11 hamsters (1 Female, 5 Males) were placed in an apparatus one minute after the microinjections. Hamsters were tested to quantify flank marking, which is a type of social communication behavior; 3 out of 6 hamsters microinjected with AVP showed expressions of flank marking and flank grooming. While the other 3 hamsters did not express any flank marking or flank grooming. When microinjected with normal saline, all 6 animals showed zero expression of flank marking. Social interaction tests with cannulated and non-cannulated hamsters was also conducted but video scoring is pending.
Conclusions: This study has shed light on the important impact hormones play in behavioral outcomes. By targeting brain regions and neural circuits we can come closer to finding interventions for neurological and psychiatric disorders using hormones. In addition to behavioral tests, immunohistochemistry will also be conducted in future dates as well as increasing our sample size for the behavioral studies.

Safety and Feasibility of Oral Pharyngeal Human Milk Therapy in Latino VLBW Babies in a Large Level III Neonatal Intensive Care Unit Along the US- Mexico Border

K. Garcia, M. Honrubia B. Martinez, and D. Honrubia. Women's Hospital at The Doctors Hospital at Renaissance, UTRGV School of Medicine

Introduction: The Doctors Hospital at Renaissance-Neonatal Intensive Care Unit (DHR-NICU) in Edinburg, is a large Level III/IV Regional NICU, admitting 140 Very Low Birth Weight (VLBW) babies per year. The population is 99% Latino, historically underserved and underrepresented; the unit is located 10 miles from the US- Mexico Border.
Background: Very Low Birth Weight (VLBW) infants are born too immaturely to feed human milk. In utero, the fetus continuously swallows amniotic fluid which provides growth stimulus and immune protective components. Human milk can provides essential antimicrobial agents and immune protective components to infants born prematurely, reducing the risk of major morbidities such as necrotizing enterocolitis (NEC) and late onset sepsis (M. Caplan, 2020).
Goal: This study aims to evaluate the safety, and feasibility of establishing Oropharyngeal Therapy with Mothers Own Milk (OPT-MOM) in VLBW infants at DHR.
Methods: A standard operating procedure protocol was established based on a previously established OPT-MOM protocol (N. Garafolo, 2019). The OPT-MOM protocol consisted of administration of mother's own milk directly to the newborn's oropharyngeal mucosa every six hours and tracking tolerance. OPTMOM was administered to newborns weighing less than 1250 grams or having a gestational age of 24 to 28 weeks. Three outcome measures were tracked: (1) Time to reach full feeds (Time FF), (2) the occurrence of feeding intolerance, including NEC, and (3) length of hospital stay (LOS). An average goal of 30 days to reach full feeds, no significant feeding intolerance, no NEC, and an average LOS less than 10 weeks, had to be met to assess effectiveness. Parent and staff education was also conducted and tracked to ensure safe and feasible OPTMOM implementation.
Results: A total of 10 eligible infants born between 24 to 28 weeks gestational age were administered OPT-MOM during a three month period. Data showed an average of 25 days to reach full feeds. No significant feeding intolerance was reported, and zero NEC was reported. Participants averaged a length of stay of 9 weeks.
Conclusion: An OPT-MOM program is safe and feasible at DHR, and has great potential to benefit premature infants and mothers. The OPT-MOM protocol was safely implemented without increased morbidity, or increased length of NICU hospitalization in VLBW infants. The implementation of this OPT-MOM has shown to be safe and efficient and met with enthusiasm by both the nursing staff and NICU mothers.

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The Dual Delivery of Y15 and Metformin in a PLGA Scaffold for the Treatment of Platinum Resistant Ovarian Cancer

Authors: Duarte, M.1, Jordan, E., Obregon, H.1, Villalobos, V.1, Arriaga, M. A.1, Levy, A.2 and Chew, S.1; 1Department of Health and Biomedical Sciences, University of Texas Rio Grande Valley, 2Department of Medical Education, Nova Southeastern University

Background
Ovarian cancer is the fifth leading cause of cancer mortality among women. This high mortality rate is linked to the development of resistance to first line chemotherapy with platinum compounds which has been attributed in part to increased activity of focal adhesion kinase (FAK). The anti-diabetic drug metformin was previously shown to induce cytotoxicity in PROC cells and thus, the combination of a FAK inhibitor, Y15 and metformin may be a promising treatment for PROC. Biomaterial scaffolds can be utilized to deliver drugs locally to maximize the drug concentration and bioactivity at the target site while minimizing non-target systemic exposure and toxicity. The Poly(lactic-co-glycolic acid) (PLGA) is an polyester copolymer and its degradation rate can be easily tailored from days to years providing versatility in the delivery of different drugs. The objectives of this study were to investigate the ability of the PLGA scaffold to control the release of the drugs and if the combined delivery of both Y15 and Metformin would result in additive effects on cell viability compared to the release of each drug alone.
Methods
Scaffolds were fabricated from an easy and economical mold-less technique by combining PLGA and the drugs (i.e. metformin and/or Y15) in tetraglycol and injected in PBS, to form a globular morphology. Drug loading from the scaffolds were determined using HPLC at absorbance wavelengths of 233 and 376 nm for Metformin and Y15, respectively. Release kinetics were determined using a spectrometer at absorbance wavelengths of 233nm and 380nm for Metformin and Y15 respectively at each timepoint. An MTT assay was used to analyze cell viability in PROC OVCAR3 cells at an absorbance of 570 nm with a spectrometer.
Results
Drug loading and loading efficiency for Metformin only and combination scaffolds were 0.577% and 0.584%, respectively and 6.35% and 6.45%, respectively. Drug loading and loading efficiency for Y15 were 0.059% and 0.064%, respectively, and 12.01% and 14.23%, respectively. A lot of drug was lost into the setting solvent during fabrication. This can be improved by optimizing the setting solvent for Metformin and Y15. A large burse release of the drug was observed from the drug encapsulated scaffolds. Incorporation of the drugs into particles prior to loading into the scaffolds may help reduce this burse release and result in a more sustained release of the drug. Metformin and Y15 treatment reduced cell viability by 34 and 46%, respectively, and 76% when combined. In studies with the fabricated PLGA scaffolds, Y15 only and metformin only scaffolds reduced cell viability by 36% and 11% respectively. When the drugs were combined in the scaffolds, there was a 95% reduction in cell viability. Although drug loading was low, it was still effective at resulting in cell death.
Conclusion
In conclusion, the delivery of Y15 and Metformin in a PLGA biomaterial scaffold can result in an additive effect on cell viability and can be further explored as a promising approach for the treatment of PROC.

The Effects of Partner Support on Breastfeeding in Underserved NICU Latina Mothers Living along the US-Mexico Border
M. Honrubia, K. Garcia, A. Almaguer-Botero, PhD. (2023) Women's Hospital at The Doctors Hospital at Renaissance. UTRGV School of Medicine

Introduction:
Mothers of very low birthweight infants undergo many obstacles initiating, and then continuing breastfeeding. The AAP (2022) recommends exclusive breastfeeding for the first 6 months of life. A Level III NICU along the US-Mexico border, cares for over 140 VLBW infants per year. Hidalgo County is an underserved-underrepresented Latino community. 97% of our mothers live near or at the poverty level. Mothers who are newly emigrated from Mexico are often disenfranchised from our medical community and proper health care (Galvan et al. 2021). The incidence of maternal anxiety and depression in the NICU maternal population is high, adding stress to the challenges of successfully breastfeeding (Bernardo, 2021).
Objective:
The goal of this study is to identify if partner support is a critical factor that helps Latina mothers successfully establish breastfeeding and breast pumping, and exclusively breastfeed their infants at discharge. The hypothesis is that those mothers who have supportive primary partners will score very high on our Partner Support of Breastfeeding (PSB) questionnaire. Mothers who have difficulty breastfeeding, will lack a supportive primary partner relationship, scoring low on the PSB. Secondarily, we will look to define what specifically partners can do to successfully support breastfeeding.
Methods:
A 10 item Parental Support of Breastfeeding Questionnaire (PSB) was created by authors using ordinal (1-10) and nominal questions. The PSB is administered by either the neonatologist, Student-Lactation Consultant. The PSBQ was provided to twenty-five NICU mothers. Scores indicate subjective partner support the mother received during the NICU breastfeeding process.
A score of > 85 correlates with high partner involvement. A score between 50-84, moderate support, below 50, minimal support.
Results:
A total of twenty-five mothers of VLBW infants were interviewed. NICU mothers that successfully established breastfeeding during NICU stay had data indicating high-level support from a partner (M= 10.0), encouragement from partner (M = 100%), partner help at night (M =100%), help with equipment (M=100%), support of pumping schedules (M = 8.4), partner accommodations to needs (M= 9.2), would breastfeed without support (M = 80%), partner supportive of diet and nutritional (M = 10.0) supportive rest and sleep (M=10.0), partner played a role in breastfeeding (M=100%). All 25 participants scored higher than an > 85 for the PSB.
Conclusion:
Our findings indicate that parental support during the breastfeeding process is fundamentally important to establishing successful breastfeeding in Latina mothers admitted with VLBW infants in Level III NICU. Mothers with excellent partner support successfully breastfeed. Mothers with no partner support do not breastfeed. In conclusion NICU mothers that successfully provided breastmilk for their baby while in the NICU reported having support in various aspects during the breastfeeding journey. This information further supports our recent educational efforts to focus on and include partners in our lactation education program.

HIGH SCHOOL STUDENT CATEGORY

Developing Machine Learning Models to Predict Oral Cancer
Author: Adhira Tippur
Presentation Title: Developing Machine Learning Models to Predict Oral Cancer
Authors: Adhira Tippur & Marzieh Ayati

Oral cancer presents a significant global health challenge, emphasizing the importance of early detection for improved patient outcomes. Despite our knowledge of certain risk factors such as smoking status and histology, our ability to predict oral cancer risk remains inadequate. In this research, our objective was to identify and characterize certain patient characteristics (including smoking and alcohol habits, as well as histology at baseline) and key genes associated with cancer development by analyzing gene sets from both cancerous and non-cancerous patients. Using R programming, we developed several predictive models using three machine learning classifiers: logistic regression, K-nearest neighbor, and naive Bayes. We assessed the accuracy of these models by considering patient characteristics, significant genes, and a combination of both. Remarkably, the predictive model for significant genes consistently achieved the highest accuracy, with logistic regression and naive Bayes reaching an impressive 74% accuracy, and K-nearest neighbor reaching 63%. However, the most accurate predictive model overall was the combination of patient characteristics and significant genes, achieving a remarkable 84% accuracy. Notably, naive Bayes outperformed the other classifiers, demonstrating accuracy levels ranging from 10% to 40% higher. By identifying significant genes contributing to cancer, we further uncovered crucial biological pathways. These findings provide valuable insights into the genetics of oral cancer, paving the way for improved early detection strategies and potentially reducing global cancer-related mortality rates.