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Abstracts*

Ultrasound Guided Mandibular Nerve Block to Supplement the Scalp Block for Awake Craniotomies: A Technical Report, Methylene Blue Study, and in-Depth Cadaveric Dissection

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Introduction: Blockage of the auriculotemporal nerve inadequately anesthetizes the temporalis muscle during an awake craniotomy. Therefore, we aim to conduct a detailed cadaveric dissection of the infratemporal fossa and introduce a novel adjunct procedure to the scalp block approach, focusing on the mandibular nerve.

Methods: We performed seven cadaveric dissections to confirm the innervation of the temporal muscle and extensively visualize the regional anatomy. Two cadaveric specimens underwent three Methylene Blue percutaneous injections of 5ml into the infratemporal fossa. Using a linear ultrasound-guided probe parallel to the zygomatic arch, the dye was injected into the area between the pterygoid muscles on two infratemporal fossae. Additionally, injections were administered at the plane between the periosteum and pterygoid muscles in one region. The success of the mandibular nerve block was confirmed by dye visualization of the dissected compartment of the sub-temporal fossa.

Results: In our specimens, branches of the temporalis muscle originate at or below the foramen ovale. Therefore, the fascial plane of the mandibular nerve serves as an excellent target for all nerves innervating the temporalis muscle. The ultrasound-guided mandibular nerve block succeeded in two out of three cases, where the dye was injected in the plane between the periosteum and the pterygoid muscles.

Conclusion: The auriculotemporal nerve block alone is insufficient for surgical anesthesia of the temporal muscle. In an awake craniotomy, blocking the mandibular nerve is necessary to achieve complete cutaneous and deeper muscular soft tissue coverage. This innovative technique shows promise as a supplement to the scalp block.

Supporting Medical Spanish Curricula in US Medical Schools: Students as Standardized Patients for Peer-to-Peer Communication Skills Practice and Feedback (Phase 1)

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Introduction: Only 6% of physicians self-identify as Hispanic in the US. Introducing standardized patient (SP) activities to English-speaking medical students can enhance language and cultural competence. Bilingually trained medical students in Puerto Rico (PR) are uniquely suited to serve as Spanish SPs. This study aims to assess the impact of practice and feedback with Spanish-speaking SPs on medical students at US medical schools.

Methods: During Phase 1 of this study, 16 PR medical students underwent formal SP training. Pre- and post-training surveys assessed students' confidence to perform SP tasks on a scale, ranging from no confidence in performing the task to complete confidence. Differences in mean scores were

calculated and paired t-tests were used to assess statistical significance.

Results: During phase 1, participants showed significant improvements in mean confidence scores: to perform consistently as a Spanish-speaking SP (2.56 vs. 3.88, p<0.02), to accurately perform as a Spanish-speaking SP (2.44 vs. 3.88, p<0.02), to identify areas of improvement in Spanish interviews (2.56 vs. 3.75, p<0.02), and to provide feedback on Spanish communication skills (2.69 vs. 3.63, p<0.02).

Conclusion: 16 PR medical students were successfully trained and increased their confidence in performing SP tasks. This progress supports the transition to Phase 2, indicating the potential for implementing this initiative to enhance Medical Spanish communication skills among US medical students. By offering accessible practice opportunities, this approach could elevate the capabilities of future physicians, ultimately reducing healthcare disparities and cultural barriers.

Molecular Analysis of Cytology Samples Collected Through Fine Needle Aspiration (FNA) and Core Biopsy for the Diagnosis and Treatment of Metastatic Melanoma

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Introduction: Cutaneous melanoma is a type of skin cancer associated with overexposure to UV radiation. It arises from melanocytes which are the pigment-producing cells in the basal epidermis of the skin. Melanoma cytology samples are collected through Fine Needle Aspiration (FNA) and core biopsy to be examined by cytopathology. Immunohistochemistry (IHC) plays a crucial role in accurate diagnosis of metastatic melanoma and treatment response assessment. It allows for the identification of protein markers expressed by melanocytes such as S100, Melan-A and SOX-10.

Methods: A retrospective metastatic melanoma database was developed through the analysis of genetic and cytopathology files (2014-2023) using Epic Hyperspace Production Mayo Clinic Health Record to identify histologic and mutational trends. Ninety-one patients and 207 melanoma lesions were screened for IHC markers, genetic mutations, lesion location and melanoma AJCC Staging.

Results: Ninety-two (69.17%), eighty-one (60.90%), seventy-two (54.14%), twenty (15.04%) and fourteen (10.53%) of the 133 lesions were positive for SOX-10, Melan-A, S100, HMB45 and PRAME, respectively. The newly developed Melanoma Genetic Mutation Panel showed a clinically significant positive mutational status for BRAF, TERT, NRAS, TP53, CDKN2A, NF1 and KIT genes.

Conclusions: The IHC markers indicative of melanoma included SOX10, Melan-A, S100, HMB45, and PRAME, listed in descending order of the lesions exhibiting positivity for each stain. Molecular profiling revealed predominant mutations in BRAF, TERT, NRAS, TP53, CDKN2A, NF1, and/or KIT genes within melanoma samples. The delineation of these IHC markers and gene mutations specific to melanoma offers valuable insights for accurate diagnosis and tailored treatment strategies for patients afflicted with melanoma.

Utilization of Pediatric Integrative Oncology Services at a Pediatric Cancer Center: A Retrospective Review of Consultations

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Introduction: Pediatric integrative medicine (PIM) combines conventional and complementary approaches to emotional and physical symptom management. However, it is poorly integrated into the care of pediatric hematology-oncology (PHO) patients. Physicians at St. Jude Children's Research Hospital have implemented a novel approach providing PIM

therapies to PHO patients. The goal of this project is to assess referral trends and patterns of PIM use.

Methods: Retrospective data was collected from electronic medical records of referrals to the PIM team from December 2020 through May 2022. Data were analyzed descriptively using counts, means, and medians using SAS v 9.4.

Results: A total of 158 patients received PIM consultation; 57.4% were simultaneously receiving cure directed therapy. Patients ranged in age between 4 months-25 years, were 52.9% female and majority white (67.7%). When compared to all new patients during the same period, referred patients tended to be older (12.9 versus 9.22 years, p<0.001). Neuro-Oncology diagnoses were the most common (31.6%). Primary reasons for consultation included management of refractory symptoms (49.7%) and parental request for holistic therapy (20.6%). 30.4% of participants had at least 1 follow up appointment, with more than half returning for at least one massage therapy or acupoint visit (N=56.1%, N=50.3% respectively). Cumulative PIM encounters were on average 9.15 visits per patient (range 1-84, median 5.0).

Conclusion: In the short time a dedicated PIM service has been available, approximately 200 patients have been referred for evaluation with half due to unmet management needs. Future work will focus on patient and family experiences capturing longitudinal patient-reported symptom metrics.

Safety of nab-paclitaxel following an allergic reaction to paclitaxel: A single institution retrospective study

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Introduction: As gynecological cancers continue to increase in incidence, paclitaxel in combination with carboplatin, which is considered standard care has been on the research board due to the hypersensitive reactions which presents fairly common. These hypersensitive reactions have been proven to be secondary to cremophor EL, which is the emulsifying agent used to dissolve paclitaxel. As a result, nab-paclitaxel, which is a taxene agent was developed using human albumin as a dissolvent, is evaluated in this study as a replacement chemotherapy for these patients in terms of safety.

Methods: Retrospective review of patients with endometrial cancer or ovarian cancer with an allergic reaction to paclitaxel who were subsequently treated with nab-paclitaxel at the Mayo Clinic in Florida from January 2016 and June 2023.

Results: A total of 43 patients with ovarian cancer (31 patients) or endometrial cancer (12 patients) and an allergic reaction to paclitaxel were identified. Allergic reactions to paclitaxel were mild in fourteen patients (32.56%), moderate in twenty-five patients (58.14%) and severe in four (9.3%) patients. None of the 43 patients had an allergic reaction to subsequent nab-paclitaxel.

Conclusion: Administration of nab-paclitaxel to endometrial cancer or ovarian cancer patients with allergic reactions to paclitaxel is safe and should be considered an acceptable treatment option in this clinical situation.

Mammary and Axillary Lymphadenopathy post COVID-19 Vaccination in the Puerto Rican Population

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Introduction: This study engaged 158 participants through a questionnaire consisting of 36 questions. The survey assessed possible mammary/axillary lymphadenopathy effects the participants may have experienced after each dose of the COVID-19 vaccine. The investigation sought to identify LAD symptoms post-vaccination, comparing intensity across age and gender, and exploring the relationship between pre-existing conditions and symptom exacerbation.
Methods: This study engaged 158 participants through a questionnaire consisting of 36 questions. The survey assessed possible mammary/axillary lymphadenopathy effects the participants may have experienced after each dose of the COVID-19 vaccine. The investigation sought to identify LAD symptoms post-vaccination, comparing intensity across age and gender, and exploring the relationship between pre-existing conditions and symptom exacerbation.
Results: The data collected shows a trend regarding the presence of mammary/axillary lymphadenopathy after COVID-19 vaccination in the Puerto Rican population. 24% reported some degree of pain after receiving the first dose, while 10.7% reported inflammation in the ipsilateral axillary injection site. Furthermore, 67% of LAD cases lasted between three and seven days after vaccination, while only 8% lasted for more than four weeks.
Conclusions: This research highlights the commonality and benign nature of LAD following COVID-19 vaccination in the Puerto Rican population. It underscores the necessity for healthcare providers to be aware of vaccination-related LAD so they may educate patients about possible symptoms post-vaccination. Finally, this will allow them to manage patient concerns effectively and avoid unnecessary diagnostic procedures.

Acral Lentiginous Melanoma in an Under-resourced Population: A Cross-Sectional Observational Study

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Introduction: Acral Lentiginous Melanoma (ALM) is a subtype of melanoma predominantly occurring on the palmar, plantar, and subungual skin, disproportionately affecting Black/African American, Hispanic, and Asian populations. Studies suggest more acral melanomas occur on the heel rather than plantar surface, proposing mechanical stress/shear force play a role in the pathogenesis of these lesions. The purpose of this study is to describe the clinical characteristics of ALM in an under-resourced community at a local safety-net hospital to address gaps in healthcare in this population.
Methods: A retrospective chart review was conducted using data from the Parkland Health Hospital System from 2010 to 2020. Sixty-two patients with biopsy-proven ALM or a documented history of therapy for ALM were included. Demographic data, location and description of the tumor, history of prior infection, inflammation, and/or injury, occupation, comorbid conditions, family history of skin cancer, and presence of metastatic disease were collected.
Results: The mean age at diagnosis was 56 years, with 61% being women and 39% being men. Forty-nine patients identified as Hispanic/Latinx. In our cohort, 40 patients presented with invasive melanoma. The most common location was the foot, predominantly on the right-sided forefoot. A history of infection or injury prior to ALM was reported in 73% of patients. Most patients presented with comorbidities, and frequent occupations included service cleaners and field laborers.
Conclusion: Results from our cohort study suggest that ALM lesions occur more frequently along the forefoot, supporting the role of mechanical stress/injury in the etiology of ALM. Further studies should investigate possible risk factors for ALM.
Funding: Nth Dimensions Summer Internship Scholarship

Quantifying Acute Psychedelic Effects on Behavior: Deep Phenotypic Profiling of 5-MeO-DMT in Mice

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Introduction: The therapeutic potential of psychedelic substances, notably 5-MeO-DMT, in mental health treatment is increasingly recognized. Studies have shown promise in reducing anxiety-like behavior in mice, and early clinical studies have demonstrated antidepressant effects in humans. However, despite these positive findings and the potential for enhancing fear extinction, the acute effects of psychedelics pose challenges for conducting behavioral experiments.

Methods: This research utilized deep phenotypic profiling to assess acute behavioral changes induced by 5-MeO-DMT in mice. Behavioral responses were recorded using sensors, and syllable analysis via Moseq2 deciphered subtle behavioral alterations. Heat maps compared vehicle and 5-MeO groups, highlighting differences in movement patterns. Correlation analysis identified specific behavioral constraints induced by 5-MeO-DMT.

Results: The vehicle group exhibited widespread movement, whereas the 5-MeO group displayed constrained behavior, often remaining at the bin periphery. Distinct syllable patterns distinguished each group, indicating limitations associated with 5-MeO administration compared to unrestrained movement in the vehicle group. Behavioral changes induced by 5-MeO-DMT normalized within 2 hours, with subtle alterations persisting beyond this period. The peak intensity of the 5-MeO-DMT experience was observed at the 20-minute mark.

Conclusion: Major behavioral changes induced by 5-MeO-DMT resolved relatively quickly, while subtle alterations endured beyond 2 hours. Insights into the temporal dynamics of behavioral effects provide a nuanced understanding of 5-MeO-DMT's acute impact on mouse behavior. Future experiments will explore resolution timepoints of these acute effects and assess 5-MeO-DMT's potential in enhancing fear extinction post-acute phase, contributing valuable insights to psychedelic research and therapeutic applications.

The Antiviral Activity of Encapsulated APOBEC3G and Uracil DNA Glycosylase in HIV-1 Replication

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Introduction: Apolipoprotein B mRNA-editing enzyme catalytic polypeptide-like 3G (A3G), is one of the most potent intrinsic restriction factors against HIV-1 replication. In the absence of HIV-1 viral infectivity factor (vif), the A3G will be incorporated into the progeny virus, inducing lethal G to A hypermutations in viral cDNA, and ultimately blocking HIV-1 viral replication. To prevent mutagenesis caused by cytidine deamination, Uracil DNA Glycosylase (UNG), a DNA repair enzyme, performs base excision repair, removing dUTP from affected DNA and generating abasic sites (AP sites). Concerning HIV-1, it has been reported that UNGs inhibit the production of HIV's cDNA, triggering the base excision repair pathway. The relationship between A3G and UNG2 in A3G presenting cells is still under debate. We hypothesize that in the presence of A3G, UNG2 will present restrictive properties against HIV-1, inhibiting its replication and interfering in the viral cycle.

Methods: To test the hypothesis, using CRISPR gene editing technology, we knockout UNG2 in human CD4+ T cell lines. After the acquisition of a pure

knockout cell line, we questioned UNG2 and A3G function against wild-type HIV-1 infection. The qRT-PCR and HIV infectivity assay (Magi Assay) were used to confirm viral load and infectivity.
Results: We found viral infectivity increased in an A3-dependent manner when UNG2 was knocked out.
Conclusion: These results suggest that UNG2 antiviral function depends on the presence of A3G. This study progresses the potential of antiviral UNG2 mechanisms for further research.
Funding: NIH Enhancing Virology Training Summer Research Program (R25AI164610)

Beyond ECMO: Evaluating ARDS Therapies and Outcomes in Pediatric Non-ECMO Healthcare Center

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Introduction: Pediatric Acute Respiratory Distress Syndrome (ARDS) presents significant challenges in the Pediatric Intensive Care Unit (PICU), marked by severe lung injury leading to high mortality rates. Extracorporeal Membrane Oxygenation (ECMO) has emerged as a vital rescue therapy, but its availability is limited. This study evaluates the prevalence, clinical characteristics, management strategies, and outcomes of ARDS in the PICU of Puerto Rico's Pediatric University District Hospital, specifically within a non-ECMO treatment framework.
Methods: An IRB-approved detailed retrospective analysis was conducted on medical records of pediatric patients aged 30 days to 18 years diagnosed with ARDS and admitted to the PICU from July 2015 to December 2022. We analyzed patient demographics, clinical data, etiology, interventions applied, and mortality rates.
Results: Among 1,853 PICU admissions, 28 (1.5%) were diagnosed with ARDS. Major causes included sepsis (39.2%), pneumonia (32%), status epilepticus (21.4%), viral infections (10.7%), and trauma (10.7%). Management involved inotropes (32%), steroids (14%), diuretics (29%), mechanical ventilation (70%), and inhaled nitric oxide (iNO) (21.4%). The overall mortality rate was 25%.
Conclusion: Despite the absence of ECMO, which is often reserved for more specialized centers, the standard therapeutic approaches in our tertiary hospital setting have been shown to sustain mortality rates comparable to facilities equipped with ECMO. This underscores the critical need for ongoing research to further enhance conventional treatment methodologies and improve survival prospects for pediatric ARDS patients in similar resource-limited settings.

Propofol's Efficiency as Pediatric Sedative Agent During Outpatient Brain MRI Procedure

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Introduction: Magnetic Resonance Imaging (MRI) is preferred for its minimum radiation and accurate disease detection for pediatric patients, though, their tendency to move compromises image quality, requiring sedation. The ideal pediatric sedative should offer quick onset, predictable duration, and versatile administration options while ensuring optimal therapeutic outcomes. Propofol, with its short arm-brain circulation time and absence of hepatic and renal adverse effects, possesses this characteristic presenting a safer option.

Methods: This study compares propofol and dexmedetomidine sedation for outpatient brain MRIs for enhancing procedure efficiency and safety. A retrospective observational analysis from 2021-2022 at a Puerto Rican pediatric tertiary teaching hospital Imaging Center including 251 pediatric patients undergoing brain MRI sedation. Excluding patients with varying MRI regions or those administered opioids from the dataset. Sedative agents, and dosage were at the physician's discretion. Sedation, recovery, and center time were statistically compared between groups and presented as median, Standard Deviations (SD) or percentages.

Results: Among 721 brain MRIs, 251 met criteria; 32.3% aged 3-5y/o. Common indications for brain MRIs were: seizures, autism, brain masses, developmental delay, and macrocephaly among others. Propofol resulted in shorter sedation and discharge times, minimizing center time, while dexmedetomidine prolonged discharge, potentially causing delays. Age showed no relationship for time variables.

Conclusion: Findings provides for the formulation of a new sedation protocol for pediatric brain MRIs, optimizing procedural effectiveness, patient comfort while ensuring safety given the prevalence of pediatric neurological and genetic diseases. Establishing a sedation protocol for pediatric MRI studies would enhance patient experience and imaging unit efficiency.

Efficacy in mechanisms of action of an HSF1 pathway inhibitor in cholangiocarcinoma

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Introduction: In cancer cells HSF1 has been found to promote metabolic states which benefit tumor cell proliferation. Furthermore, HSF1 expression and function has been found to be altered in hepatocellular carcinomas. In this study, we aimed to provide insight into the novel targeted therapy of NXP800, and its' ability as an anti-cancer agent in human patient-derived xenograft (PDX) mouse models as well as its efficacy against different cholangiocarcinoma (CCA) cell lines.

Methods: Human CCA PDX mice models were prepared and subsequently treated with either NXP800 or vehicle. P-values were obtained to determine statistical significance between tumor volumes for each group. Several different CCA cell lines were treated with NXP800 to determine half maximal inhibitory concentration (IC50). All procedures are approved by IACUC.

Results: PDX models 179 and 535 comparisons for NXP800 vs. vehicle ($p<0.0001$) showed significant difference in tumor volumes with $p<0.0001$ and $p<0.0021$, respectively. Meanwhile, PDX model 261 comparison for NXP800 vs. vehicle ($p<0.0001$) showed significant difference in tumor volume. In addition, PDX model 135 comparison for NXP800 vs. vehicle ($p<0.9958$) showed no significant difference in tumor volume. NXP800 IC50 values for seven CCA cell lines were obtained.

Conclusions: NXP800 was found to be an effective therapeutic agent against CCA PDX models especially models 179, 535 and 261. IC50 for CCLP-1, EGI, FAC, HUCCT-1, AND KRAS suggests characteristic susceptibility to treatment with NXP800 for these cell

lines. CCA PDX models with no significant reduction in tumor volumes as well as higher concentrations in IC50 assays, both suggest inherent resistance to NXP800 treatment.

How Population-Specific Care Yields Clinic Success at Clínicas Padre Venard

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Introduction: Clínicas Padre Venard, a student-run free clinic catering to middle-aged and low-income individuals in Old San Juan, experienced low attendance rates. To tackle this, the board initiated a community outreach project aimed at enhancing and addressing patient attendance.
Methods: In the 2022-2023 academic year, the community outreach department introduced an initiative to enhance participation. This involved creating a welcoming waiting room environment, encouraging socialization, and providing meals. Volunteers addressed patients by name, facilitated conversations, and promoted one-on-one interactions. Patients were offered clothing, a meal, water, and take-home food options.
Results: The attendance at the clinic showed a significant twofold increase from 2022 to 2023. Specifically, there were 52 visits in 2021-2022, which rose to 111 in 2022-2023. The subsequent initiative in 2023-2024 served 63 patients up to December 2023. Compared to the same period in the academic years 2021-2022 and 2022-2023, this represents an increase of 26 and 42 patients, respectively (Fig. 1).
Conclusions: The initiative highlights the efficacy of population-specific care in mitigating barriers to medical access by addressing community challenges and providing essential resources. It presents a potential solution for tackling social determinants of health among underserved communities, thereby enhancing medical attendance and access.

Unraveling Rigidity: A Comprehensive Case Study of Stiff Person Syndrome

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Introduction: Stiff Person Syndrome (SPS) is a rare acquired neurological disorder that often causes progressive muscle stiffness and repeated episodes of painful muscle spasms. The onset of stiffness is insidious and usually involves proximal muscles. This rare disease has a prevalence of one to two cases per million and an incidence of one in a million. The role of autoimmune mechanisms, genetic factors, and the potential for personalized treatment strategies are discussed in the context of this unique case.
Methods: This case report details the case of a 56-year-old male with a past medical history of chronic back pain and generalized anxiety disorder who was misdiagnosed for more than two years resulting in multiple emergency department visits including a prolonged hospitalization that was crucial for definite diagnosis.
Results: This case contributes to the limited literature on SPS, emphasizing the complexity of its clinical presentation and the challenges in achieving optimal management. SPS presents a diagnostic and therapeutic challenge, requiring a nuanced and individualized approach.
Conclusion: This case underscores the importance of a multidisciplinary team in managing this rare neurological disorder. It highlights avenues for further research to enhance our understanding and treatment of SPS.

vNOTES: A Modern Approach to Vaginal Hysterectomies in Puerto Rico

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Introduction: The American College of Obstetrics and Gynecologists considers vaginal hysterectomies (VH) the gold standard approach for hysterectomies. However, the rate of laparoscopic hysterectomies continues increasing while the rate of VH remains stagnant. Hysterectomies via transvaginal natural orifice transluminal endoscopic surgery (vNOTES) are minimally invasive procedures that modernize the approach for VH. vNOTES allows for better visualization, closure, and healing, while also offering patients less pain and fewer complications. This study evaluates the feasibility of vNOTES hysterectomies among women in Puerto Rico (PR).
Methods: This study is a sub-analysis of an ongoing study approved by the IRB of the University of Puerto Rico and Hospital Auxilio Mutuo. A single surgeon performed vNOTES hysterectomies in sixteen patients from September 2022 to June 2023. Medical records were reviewed, and interviews conducted.
Results: The average patient age was 50.7 (± 12.2) years, and the average body mass index was 30.7 (± 8.4). All procedures were successfully completed within 2 hours and 55 minutes with an average blood loss of 123.4 ± 92.9 mL. All patients were discharged within 28 hours. One patient (1, 6.3%) suffered a bladder injury that was repaired intraoperatively. Seven days after the procedure, most patients reported mild (7, 43.8%) or no pain (6, 37.5%). Patients indicated that Acetaminophen 1g (2, 12.5%) and Gabapentin 300mg (2, 12.5%) relieved their pain. Conclusion: Preliminary findings suggest that vNOTES hysterectomy is a feasible alternative that could provide patients in PR significant benefits. Further research is vital to determine the effect of the novel vNOTES on the rate and outcomes of hysterectomies.

Breaking LGBTQ+ Health Barriers: Educating Future Physicians

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Introduction: To address the health disparities in the LGBTQ+ community, our project aims to enhance medical training at Universidad Central del Caribe's School of Medicine (UCC-SOM) through an LGBTQ+ patient care workshop that provides an intersectional approach and perspective, ensuring future physicians and healthcare professionals can provide inclusive care.
Methods: A student-led workshop was created using the Association of American Medical Colleges' (AAMC) resource for medical education. We conducted a literature review on LGBTQ+ health disparities, intersectional critical race theory, and intersectionality in medicine and developed a workshop that integrates theory into clinical examples for medical students.
Results: The 2-hour workshop includes one hour of discussion on LGBTQ+ terminology, health disparities, health barriers that LGBTQ+ individuals face, and one hour of clinical case scenario exercises with standardized patients. This format aims to enhance medical students' understanding and practical skills in LGBTQ+ patient care.
Conclusion: Integrating the AAMC-informed workshop at UCC-SOM addresses the urgent need to reduce health disparities in the LGBTQ+ community and strives to bridge the gap in healthcare that many individuals from the LGBTQ+ community experience. By providing targeted and comprehensive education, we prepare future physicians for inclusive care, addressing the psychosocial challenges faced by aging LGBTQ+ individuals while promoting sustainable patient-centered clinical practices.

Health Disparities in Puerto Rican Teen Pregnancies Outcomes

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Introduction: Research on maternal-infant morbidity and mortality disparities among teen pregnancies in the Hispanic population is crucial. We aim to compare maternal risk factors and outcomes of infants born to teen versus non-teen mothers to address the challenges for healthcare services in this vulnerable population.

Methods: A retrospective cohort study conducted at a Level IV Neonatal Intensive Care Unit in Puerto Rico utilizing the Vermont Oxford Network and the Neonatology Section databases from 2015-2023. Maternal-infant morbidity and infant mortality rates were compared between teen (19 years and younger) and non-teen pregnancies. Data analyzed using Intellectus Statistics software (t-test, Fisher exact, Pearson's chi-square) was used to compare differences among groups. IRB approved.

Results: Within the cohort of 3161 patients, 9.36% comprised adolescents (n=296). The median age of mothers was 27 years. Regarding maternal morbidity, maternal chronic illnesses showed a marked disparity, with non-teenagers exhibiting a higher prevalence ($p<0.001$). Cesarean sections were more common in non-teenagers ($p<0.001$). But chorioamnionitis was more prevalent in teen mothers ($p=0.010$). Infants' birth weight, gestational age at birth and morbidities were similar among groups. Survival rate was significantly lower for infants born to adolescent mothers ($p=0.0287$, OR 1.47 [1.04-2.09]).

Conclusion: Despite increased maternal chronic illnesses and cesarean sections in non-teen pregnancies as well as similar comorbidities in infants, adolescent pregnancies are at more risk of infant mortality. These early insights underscore the importance of further investigation into the unique healthcare needs and challenges faced by adolescent mothers, emphasizing the potential impact on both maternal and infant health outcomes.

Validation of Automated Leg Length and Offset Measurements

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Introduction: Total hip arthroplasty (THA) aims to restore hip biomechanics by adjusting leg length and offset. Manual measurement of these parameters is extremely time-consuming. This study devised an automated algorithm for measuring these metrics on pre- and post-operative pelvis radiographs, facilitating analysis in a large THA patient cohort.

Methods: Pre- and post-operative anteroposterior (AP) pelvis radiographs from a Total Joint Arthroplasty Registry were analyzed using a deep learning algorithm for leg length and offset calculation. The algorithm assessed discrepancies and changes in eight variables across the entire cohort. Manual measurements from four raters were compared with algorithm results on 100 image pairs to assess intra-class correlation and both inter- and intra-rater agreement among human raters.

Results: The algorithm showed strong correlation with human raters, with coefficients ranging from 0.83 to 0.88 for offset and 0.92 to 0.97 for leg length. Human raters displayed good to excellent inter-rater and consistent intra-rater agreement. Preoperatively,

arthritic joints had shorter leg lengths compared to contralateral legs, with reduced discrepancy post-arthroplasty.

Conclusion: Our deep learning algorithm efficiently calculates leg length, offset, and related measurements from AP pelvis radiographs. It facilitates population studies and could aid in preoperative, intraoperative decision-making, and postoperative monitoring.

Understanding Breast Implant Illness in Puerto Rico

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Introduction: Breast augmentation surgery is among the top cosmetic procedures performed in the United States. Breast implant illness (BII) is a disorder associated with a variety of symptoms that present post implant placement and disappear after implant removal. No comprehensive studies have investigated the occurrence of BII in Puerto Rico. This study aims to explore the presence of BII in this population, the symptoms that appear most frequently, and the time to symptom presentation.

Methods: Participants are recruited through social media, word-of-mouth, and at breast radiology centers. An 18-question survey was designed which covers demographics, past medical/family history, type of implant, and possible BII symptoms experienced by participants. The survey does not collect any personal information or identifiers. Approved by IRB.

Results: The questionnaire has received 361 complete responses, 30.6% of which indicate they have experienced concerning symptoms after implant placement. 70% of those have experienced anxiety/depression, 66.7% body/joint pain, 64% cognitive/memory impairment, and 50% experienced breast pain and burning. The time to symptom presentation varied, however in 30.3% cases the symptoms appeared 1-3 years after implant surgery, while 20.2% appeared 4-6 years after.

Conclusion: Our research underscores the critical need for a comprehensive investigation into the prevalence and clinical presentation of BII in Puerto Rico. Our data shows that patients in Puerto Rico are experiencing symptoms related to BII, it demonstrates the most common symptoms experienced, and the time to symptom presentation. To strengthen the validity of our findings and explore further associations, it is essential to recruit additional participants.

Improving Cervical Cancer Outcomes Among LHS+ Women Through Educational Workshops

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Introduction: To address higher cervical cancer incidence and mortality rates in Latina, Latino, Latinx, Latine, Hispanic, or of Spanish Origin+ (LHS+) women, this study aimed to enhance healthcare provider awareness and communication skills through an educational intervention.

Methods: Utilizing the Kern model, the workshop included PowerPoint presentations, video analysis, and case discussions. It was implemented four times across medical faculties. Approved by IRB protocol number 2023-10.

Results: The 39 participants who completed both pre- and post-tests showed statistically significant increases in confidence in meeting the educational objectives with median score improvements from 2.0 (interquartile range: 1.0 to 3.0) to 4.0 (interquartile range: 3.0 to 4.0), as analyzed using the Related-Samples Wilcoxon Signed Rank Test, ($p < 0.01$).

Conclusion: The educational workshop effectively enhanced participants' confidence and competence in addressing cervical cancer disparities among LHS+ women, underscoring the value of culturally informed training programs in medical education.

Case Reports

Hemodialysis-related Bilateral Nonarteritic Posterior Ischemic Optic Neuropathy: A Case Report

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Introduction: Anterior Ischemic Optic Neuropathy (AION) is the most common acute optic neuropathy among adults. Posterior ION (PION) is a rare form of ION due to ischemia in the posterior portion of the ON. It presents as a monocular or bilateral, painless loss of vision. PION is distinguished from AION by the appearance of a normal ON head, compared with a swollen optic disc in AION. Nonarteritic-PION is associated with vasculopathic risk factors and peri-procedural hypoperfusion.

Case presentation: A 59-year-old male patient with medical history of uncontrolled hypertension and end-stage renal disease on hemodialysis (HD) presented with sudden painless blurry vision in the left eye after HD. Two months prior, he had a similar episode in the right eye that resulted in permanent vision loss in that eye. Both eyes reacted to light and EOM were grossly intact. Visual acuity was light perception in both eyes. Fundus examination showed bilateral optic nerve paleness, without ON edema or retinal lesions. Orbital MRI showed findings consistent with ION in the left eye. Carotid ultrasound revealed no significant atheromatous lesions and temporal artery biopsy was negative for GCA. A PION diagnosis was reached.

Conclusions: This case supports the hypothesis of PION as a rare complication of HD. It may result from hypotension episodes during HD, anemia, accumulations of toxins, platelet and endothelial dysfunction. Management should focus on optimizing modifiable risk factors to prevent further vision loss and involvement of the contralateral eye, as occurred in our patient.

Aggressive Management as a Tool to Prevent Fatality: Autoimmune Polyglandular Syndrome Case Report

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Introduction: Autoimmune Polyglandular Syndrome (APS) is an intricate condition marked by autoimmune dysfunction affecting two or more endocrine glands. It can result from mutations in a regulator gene. Diagnosis usually emerges later when patients manifest symptoms from hypoparathyroidism or Addison's disease. APS is classified into two types: Type 1 and Type 2. Type 1, often initiating in early infancy, presents a triad of manifestations: candidiasis, hypoparathyroidism, and Addison's disease. While, Type 2 prevalent in infancy and adulthood, involves Addison's disease, type 1 diabetes, and chronic thyroiditis.

Case Presentation: We present a case of a 13-year-old Hispanic girl admitted to the Pediatric Intensive Care Unit (PICU) after an adrenal crisis. Her medical history comprises APS, encompassing Addison's disease, hypoparathyroidism, and Growth Hormone deficiency. Throughout her stay, laboratory results indicate hypocalcemia, hyperglycemia, and hypomagnesemia, all of which were promptly managed. Extensive consultation with an endocrinologist led to concurrence on adjusted medication and future follow-up. Prior PICU admissions disclosed symptoms like hypercalcemia, hyponatremia, jaundiced skin, vomiting, and vertigo. Additional history involves first-degree AV block, palpitations, and nausea.

Conclusions: This case underscores early recognition of endocrine dysfunction in diverse symptoms. The patient was educated on the severity of her condition and has strict instructions that she should come straight to our PICU for adequate management. Managing electrolyte imbalances and body homeostasis remains crucial for positive outcomes. Hormonal treatment, with strong compliance, is pivotal for sustained assessment and progress. In conclusion, this case underscores APS's intricacy and the vital role of tailored management, optimizing patient well-being through vigilant evaluation.

Cannabis-Induced Acute Hepatotoxicity & Neuropathic pain: A Case Report

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Introduction: The medicinal use of cannabis as an analgesic is at the vanguard of plant-based supplementation for chronic neuropathic pain management. Marijuana use for chronic neuropathic pain is mainly associated with psychiatric side effects. However, data on the hepatotoxic side effects of chronic cannabis use is still unknown. This case report aims to document the hepatotoxic effects of chronically inhaled and edible cannabis, in the management of chronic neuropathic pain.

Case presentation: A 56-year-old Hispanic female, with a history of chronic neuropathic pain, admitted due to vertebral osteomyelitis with a phlegmonous process treated with prolonged intravenous antibiotics. During her admission, she developed unexplained transaminitis, hyperbilirubinemia and jaundice. Workup laboratory findings were remarkable for hepatitis C virus infection, which was supportively managed until autoimmune, structural, or drug-induced etiologies were ruled out with immunologic markers, abdominal ultrasound and liver biopsy. Upon further interrogation of events, and unprecedented peak elevations in AST (1833), ALT (1382), ALP (374), and total bilirubin (8.13), the patient admitted inhaling cannabinoids chronically and during the time hospitalized. The patient was encouraged to strictly avoid all cannabinoids in light of hepatic function

deterioration; and near resolution of liver injury was appreciated within 48-72 hours of discontinuation.
Conclusions: As marijuana use for pain management becomes a more widespread phenomenon, adverse drug reactions barely described in literature are being observed more frequently. Recognizing the potential life-threatening side-effects such as the ones presented above is critical in diagnosing and managing the complications and morbidities they may generate.

Successful treatment of Hailey-Hailey Disease with Adalimumab

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Introduction: Hailey-Hailey Disease (HHD) is an acantholytic autosomal dominant disease characterized by the development of relapsing and recurrent blisters, erosions, and crust in intertriginous areas. Currently, there are no curative treatments for HHD and emerging therapies are focused on controlling the inflammation by targeting distinct pathways.
Case Presentation: A 43-year-old man presented to the dermatology clinic with a history of crusted, scaly, erythematous plaques in the mid-lower back. The diagnosis of HHD was confirmed through both clinical manifestations and a skin biopsy. Over six years, the patient underwent a series of therapies to control the condition, including intralesional steroids, oral antibiotics, antifungal creams, zinc oxide cream, Aquaphor ointment, and Hibiclens scrub. These medications only provided little improvement, leading the patient to return with unremitting symptoms. After reviewing a case report of a patient whose HHD improved after the administration of Adalimumab for ulcerative colitis, we decided to discuss and try this treatment option as an off-label alternative for our patient's HHD. Adalimumab was initiated with a subcutaneous induction dose of 80 mg followed by a subcutaneous maintenance dose of 40 mg every 14 days. Following the induction dose, a 90-100% improvement was observed within the first 2 weeks. The patient remained in sustained remission for six months until discontinuation of the therapy due to lack of insurance coverage.
Conclusions: Our case contributes an additional instance of a successful treatment of severe and recalcitrant HHD with Adalimumab, a monoclonal antibody against TNF-α. Further randomized research is needed to assess the efficacy of Adalimumab for HHD.

Vancomycin-Induced DRESS: An Important Concern in the Management of Osteomyelitis

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Introduction: Drug reaction with eosinophilia and systemic symptoms (DRESS) is a rare and potentially life-threatening adverse drug reaction. Clinical manifestations are characterized by an extensive skin rash, lymphadenopathy, eosinophilia, and atypical lymphocytes, with or without organ involvement.
Case presentation: We present the case of a 49-year-old male with Vertebral Osteomyelitis complicated by an Epidural Abscess. The patient was started on Vancomycin and Cefepime. Afterwards, he developed a MRSA bacteremia, a Pseudomona aeruginosa bacteremia, and Trichosporon asahii fungemia. Patient was then switched to Meropenem, and Voriconazole was added for fungemia. Twenty-two days later, he developed a pruritic skin eruption in his trunk, abdomen and lower extremities. Laboratory values were remarkable for eosinophilia of 11% and transaminitis. A punch biopsy of the lesion showed mixed-cell inflammatory infiltrate with eosinophils. Patient was started on Diphenhydramine and Betamethasone Dipropionate

cream. However, due to worsening of his condition and persistent eosinophilia, Methylprednisolone was added. Antifungal therapy with Voriconazole was completed, and Vancomycin was discontinued as the most likely culprit for this patient's DRESS syndrome, and replaced with Daptomycin. The patient's skin eruption subsequently resolved, along with his transaminitis and normalization of eosinophil levels.

Conclusions: The management of Vertebral Osteomyelitis is a multifaceted approach where healthcare professionals must exercise caution regarding potential complications and side effects of prolonged therapeutic interventions, such as the development of DRESS Syndrome. Healthcare providers should remain vigilant, especially in the context of prolonged antibiotic use due to its potential of DRESS becoming a life-threatening condition with a 5-10% mortality rate.

Verrucous Carcinoma: A Rare Bladder Neoplasm

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Introduction: Squamous cell carcinoma (SCC) accounts for 3-7% of bladder cancers in the U.S. It is usually associated with chronic inflammation, chronic bladder infections, schistosomiasis or chronic indwelling catheter. Verrucous carcinoma (VC) is a well differentiated SCC variant, notable for its predominantly well demarcated, locally invasive fast progression and non-metastatic behavior.

Case presentation: We present the case of a 66-year-old male who presented to the urology clinics with a 2 month history of gross hematuria and dysuria. Patient brought in a CT scan with evidence of a 6cm right lateral wall tumor with bladder diverticulum involvement. Patient taken to OR and found with a very large bladder tumor with prostate invasion, and was partially resected; pathology report confirmed a verrucous carcinoma. Within 3 months the patient tumor grew to a 13cm mass with right pelvic wall invasion, internal iliac artery encasement, left hydronephrosis requiring nephrostomy tube and palliative chemotherapy.

Conclusions: VC is an extremely rare bladder tumor, mostly associated with schistosomiasis. Only nearly 20 cases of non-schistosomiasis VC have been reported in literature. There's an unclear role of human papillary virus in this type of malignancy. Metastasis is mainly seen in tumors with conventional SCC components. Treatment includes complete excision of the tumor with wide local excision, usually done with partial or complete cystectomy. Radiotherapy is reserved for inoperable cases or patients unfit for surgery. To our knowledge, this is the first verrucous carcinoma of bladder reported in Puerto Rico.

An intracranial bleeding conundrum: The diagnostic challenge of an atypical culprit

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Introduction: Elucidating the source of intracranial bleeding is of paramount importance as it guides the selection of suitable treatment and management strategies. This becomes particularly crucial when dealing with brain vascular abnormalities such as dural arteriovenous fistulas (DAVFs). Due to its relatively rare occurrence, these DAFVs are an often forgotten cause of intracerebral hemorrhage.

Case presentation: This is the case of a 71-year-old female transferred from another hospital to the supra-tertiary healthcare center of Puerto Rico due to intracranial hemorrhage. On arrival, the

patient was intubated due to poor inspiratory effort and was started on anti-seizure prophylaxis. Brain Computed Tomography (CT) was remarkable for several hemorrhagic contusions of atypical location. In light of the patient's medical history the initial differential diagnosis contemplated a primary hemorrhagic lesion against hemorrhagic metastasis. Further brain imaging using Magnetic Resonance Imaging (MRI) with findings suggestive of Moyamoya disease, thus further diagnostic imaging was instilled to confirm the presumptive diagnosis by performing CT Angiography and Digital Subtraction Angiography (DSA). DSA was remarkable for a left transverse sinus arteriovenous (AV) dural fistula. Given these findings, surgical embolization was performed without complications.

Conclusions: This case showcases the clinical complexity and multi-imaging techniques needed for diagnosing an atypical cause of intracranial bleeding in the geriatric population. Identifying the origin of intracranial bleeding is crucial as this may impact medical management and clinical outcomes. Identifying these dural arteriovenous fistulas was an indication of surgical intervention that paved the way for successful embolization.

Acute Aortic Dissection in a Young Patient: Importance of Diagnostic Markers and Differential Diagnosis From Myocardial Infarction

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Introduction: Acute aortic dissection (AAD) is a severe condition caused by a tear in the aorta, leading to a hematoma in the intima-media space, with symptoms of sudden-onset, severe chest pain. Differentiating AAD from myocardial infarction (MI) is critical. AAD predominantly affects older individuals, with cases under 40 linked to specific factors like connective tissue disease or bicuspid aortic valve. Occurrence in a <40-year-old male without these factors is notably rare.

Case presentation: A 37-year-old male presented with sudden chest pain (8/10), back radiation, nausea, diaphoresis, and dyspnea. Management included aspirin in the ambulance and antihypertensives in the ED. His history included a hypertensive crisis 7 years prior, with a positive family history of aortic dissection. Physical examination ruled out Marfanoid habitus. CTA revealed a type A aortic dissection extending from aortic valves to the proximal right common iliac artery.

Conclusions: This case underscores aortic dissection in young patients without connective tissue disorder features. Differentiating AAD from MI is crucial, as aspirin, commonly used in MI, poses risks of dissection exacerbation. Watanabe et al. proposed specific diagnostic markers such as chest pain with back pain and systolic blood pressure (SBP) ≥150 mmHg or SBP <90 mmHg, with a specificity of 99%, aiding in accurate differentiation. Additionally, genetic testing for Non-syndromic Heritable Thoracic Aortic Disease is warranted in this case. Identifying a genetic predisposition in young patients with aortic dissection can better guide physicians in the follow-up care of patients and their relatives, improving outcomes and preventing further complications.

Unraveling Rigidity: A Comprehensive Case Study of Stiff Person Syndrome

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Introduction: Stiff Person Syndrome (SPS) is a rare acquired neurological disorder that often causes progressive muscle stiffness and repeated episodes

of painful muscle spasms. The onset of stiffness is insidious and usually involves proximal muscles. This rare disease has a prevalence of one to two cases per million and an incidence of one in a million. The role of autoimmune mechanisms, genetic factors, and the potential for personalized treatment strategies are discussed in the context of this unique case.

Case Presentation: This case report details the case of a 56-year-old male with a past medical history of chronic back pain and generalized anxiety disorder who was misdiagnosed for more than two years resulting in multiple emergency department visits including a prolonged hospitalization that was crucial for definite diagnosis.

Conclusion: This case contributes to the limited literature on SPS, emphasizing the complexity of its clinical presentation and the challenges in achieving optimal management. SPS presents a diagnostic and therapeutic challenge, requiring a nuanced and individualized approach. This case underscores the importance of a multidisciplinary team in managing this rare neurological disorder. It highlights avenues for further research to enhance our understanding and treatment of SPS.