CLINICAL CASE POSTER ABSTRACTS

Navigating Diagnostic Challenges: A Case of Misdiagnosed Type 1 Diabetes in an Adult with Obesity and the Impact of Healthcare Fragmentation

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Objectives

Identify the Diagnostic Challenges in Differentiating Type 1 and Type 2 Diabetes

Examine the Impact of Healthcare Fragmentation on Patient Outcomes

Promote Strategies for Improving Continuity of Care

Introduction

Diabetes Mellitus (DM) is a global health challenge, affecting over 529 million people worldwide. It encompasses a group of metabolic diseases characterized by chronic hyperglycemia due to insufficient insulin production or impaired insulin utilization. Differentiating between Type 1 (T1DM) and Type 2 Diabetes Mellitus (T2DM) is crucial, as they require distinct treatment approaches. T1DM often presents acutely in younger populations, whereas T2DM typically develops gradually in adults. However, the diagnostic overlap between late-onset T1DM and T2DM complicates accurate classification, with approximately 40% of late-onset T1DM cases misdiagnosed as T2DM. This case underscores the clinical and diagnostic challenges of late-onset T1DM, particularly within the fragmented healthcare system.

Case Description

A 31-year-old African American male with a history of asthma, eczema, and obesity (BMI 40) was initially diagnosed with T2DM at age 24 after presenting with polyuria, polydipsia, and fatigue. Despite multiple hospitalizations for diabetic ketoacidosis (DKA) and trials of various medications, including metformin and sitagliptin, the patient's glycemic control remained poor, with an A1C of 13. The patient was intermittently on insulin regimens but continued to experience severe side effects and recurrent DKA episodes. In late 2021, the patient began consistent follow-up with the same primary care physician, leading to the decision to test for islet cell autoantibodies. The testing revealed elevated insulin antibodies, confirming the diagnosis of T1DM. However, the patient's care was complicated by insurance delays, laboratory errors, and inconsistent follow-up, resulting in ongoing challenges in diabetes management.

Discussion

This case highlights the complexities of diagnosing T1DM in young adults, particularly when overlapping features with T2DM are present. The patient's high BMI and lack of autoimmune history initially obscured the T1DM diagnosis, leading to inappropriate treatment and recurrent DKA episodes. This case

also illustrates the limitations of the AABBCC diagnostic methodology, where factors such as age and BMI can mislead clinicians. Additionally, the fragmented healthcare system contributed to delayed diagnosis and suboptimal management, underscoring the need for improved continuity of care.

Outcomes/Conclusions

This case demonstrates the critical importance of accurate and timely diagnosis in diabetes management. Delayed diagnosis of T1DM due to initial misclassification as T2DM resulted in poor glycemic control, increased healthcare costs, and significant patient stress. The case emphasizes the necessity of comprehensive diagnostic evaluations, including early antibody testing in atypical diabetes presentations. Continuity of care and effective communication between healthcare providers are essential to avoid diagnostic delays and improve patient outcomes. Ensuring that clinicians consider all possible diagnoses, particularly in complex cases, is key to optimizing treatment strategies and enhancing patient quality of life.

Acknowledgments/Disclosures

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The Rapid Diagnosis and Management of Fournier's Gangrene in a Diabetic Patient

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Objectives

The goal of this case report is to highlight the clinical presentation, diagnostic challenges, and treatment regimen for Fournier's gangrene in a high-risk patient with multiple comorbidities. It emphasizes the crucial role of early identification of this infection and aggressive management in preventing fatal outcomes.

Introduction

Fournier's gangrene is a rare, life-threatening form of necrotizing fasciitis that rapidly affects the perineal and genital regions.[1,2] This infection, often seen in older men, diabetic, and immunocompromised patients, is commonly triggered by infections such as urinary tract infections or perianal abscesses.[2,3] Due to its rapid spread and high mortality rate, Fournier's gangrene requires prompt diagnosis, intravenous antibiotics, and surgical debridement.[3,4]

Case Description

A 66-year-old male with a history of hypertension, hyperlipidemia, and type 2 diabetes mellitus presented to the emergency department with a progressively worsening scrotal abscess and testicular swelling over the past four days. Physical exam findings included scrotal tenderness, palpable crepitus, and purulent discharge from the perineum and posterior scrotum. Labs were obtained and revealed elevated WBC count and lactate level. A CT scan showed subcutaneous gas in the perineum, consistent with necrotizing fasciitis (Fournier's gangrene). The patient underwent emergent surgical debridement and received broad-spectrum antibiotics. Postoperative care included wound management and referral to plastic surgery.

Discussion

This case demonstrates the full diagnostic workup and differential considerations in Fournier's gangrene including cellulitis, perianal or periurethral abscess, orchitis, scrotal abscess or edema, gas gangrene (clostridial myonecrosis), mucormycosis, gangrenous balanitis, testicular torsion, herpes or syphilis, invasive candidiasis, SJS or TEN, toxic shock syndrome, pyoderma gangrenosum, and vasculitis while also emphasizing the need for early diagnosis and surgical intervention. The use of osteopathic principles, such as monitoring systemic signs and understanding the effects of underlying conditions like diabetes[5], were important in this case.

Outcomes/Conclusions

This case illustrates the importance of rapid diagnosis and early, aggressive treatment in Fournier's gangrene, particularly in diabetic, or high-risk patients. Clinicians should maintain high clinical suspicion for this condition in patients with unexplained perineal pain, fever, and swelling.[1,4] Early surgical debridement and broad-spectrum antibiotics are essential to improve survival and minimize morbidity.[1,4] Intervention should be initiated without delay, as Fournier's gangrene is a clinical diagnosis, and treatment should not be postponed for lab results or imaging studies.[3]

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Cavitary Pulmonary Lesions in an Immunocompromised Patient: A Comprehensive Differential Diagnosis in an Endemic Region

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Objectives

This case highlights the diagnostic challenges of cavitary pulmonary lesions in immunocompromised patients, emphasizing the need for a broad differential that includes bacterial, fungal, and noninfectious etiologies. It underscores the importance of considering regional epidemiology, such as histoplasmosis and blastomycosis, in endemic areas to guide diagnosis and treatment.

Introduction

Histoplasmosis and blastomycosis are systemic fungal infections endemic to the Ohio and Mississippi River valleys, including Chicago.[1] Both infections occur through inhalation of fungal spores and can present with overlapping pulmonary findings, such as cavitary lesions.[2] Histoplasmosis, caused by Histoplasma capsulatum, is the most common systemic fungal infection in the United States, often associated with exposure to bird or bat droppings in areas such as caves, barns, or soil.[3] Blastomyces dermatitidis, the causative agent of blastomycosis, is found in moist soil and decaying organic matter, often near waterways.[1] While histoplasmosis is more common in urban regions like Chicago, both infections must remain on the differential for patients with compatible clinical and imaging findings.

Case Description

A 33-year-old male with type 1 diabetes mellitus (T1DM) presented with diabetic ketoacidosis (DKA) and was transferred from an outside hospital. Initial evaluation revealed severe metabolic abnormalities, including low pH, significantly decreased bicarbonate, hyperglycemia (445 mg/dL), and hyperkalemia (5.7 mmol/L). He was treated with intravenous fluids, electrolyte correction, and insulin therapy. Laboratory studies showed leukocytosis (WBC 16.6 × 10^3/µL) and thrombocytosis (platelets 564 × 10^3/µL).

Chest X-ray and subsequent CT imaging revealed cavitary lesions, including a right hilar mass-like opacity extending into the upper lobe and additional lesions in the apex and lower lobe of the right lung. Given his immunocompromised state, infectious disease consultation was obtained, and bronchoscopy with BAL was performed. Urine histoplasma antigen testing was positive, though potential cross-reactivity with Blastomyces was acknowledged due to the patient's exposure history and imaging findings.

The patient was started on liposomal amphotericin B, transitioned to oral itraconazole, and planned for a six-month antifungal course. Follow-up with infectious disease specialists was arranged to monitor itraconazole levels and pending BAL results.

Discussion

This case underscores the importance of maintaining a broad differential diagnosis in immunocompromised individuals presenting with cavitary lung lesions. The differential included bacterial, fungal, and noninfectious causes such as Nocardia, Mucor, Histoplasma capsulatum, Blastomyces dermatitidis, Mycobacterium tuberculosis, invasive aspergillosis, and granulomatosis with polyangiitis.

DKA likely contributed to the patient's immunosuppression, impairing phagocyte function, T-cell activity, and cytokine production due to hyperglycemia and oxidative stress. These factors increased susceptibility to opportunistic infections such as histoplasmosis. The patient's imaging findings and regional epidemiology strongly supported histoplasmosis as the primary diagnosis.

OMT was deferred due to the patient's ongoing infection and lack of symptom improvement.

Outcomes/Conclusions

This case highlights the need for a broad differential diagnosis for cavitary pulmonary lesions in immunocompromised patients. Regional epidemiology, such as histoplasmosis and blastomycosis, aids diagnosis. Early antifungal therapy and close follow-up ensured recovery. It emphasizes timely treatment, interdisciplinary collaboration, and tailored management for optimal outcomes in complex cases.

Acknowledgments/Disclosures

All individuals who contributed to this case are listed as authors. The authors have no conflicts of interest or financial disclosures to declare.

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“Early Bone Loss in Turner Syndrome: A Case of Primary Ovarian Insufficiency and Osteoporosis”

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Objectives

This case aims to highlight the challenges in managing osteoporosis in a young patient with Turner syndrome (TS) who developed the condition unusually early. Given the lack of established guidelines for this specific patient population, this case underscores the need to explore treatment strategies tailored to address early-onset osteoporosis in TS patients.

Introduction

Turner syndrome is a rare chromosomal disorder characterized by the partial or complete loss of one X chromosome, leading to multiple comorbidities, including ovarian insufficiency and osteoporosis. These patients are at a higher risk for fractures even with normal bone mineral density (BMD) due to estrogen deficiency. While hormone replacement therapy (HRT) is widely recommended to prevent bone loss, limited data exists on secondary fracture prevention in young TS patients with established osteoporosis. This case emphasizes the necessity of early intervention, holistic management strategies, and the consideration of social factors in TS care.

Case Description

We report a Hispanic female in her early 20s with TS, primary amenorrhea, and secondary hypertension who presented for primary care establishment. Diagnosed with TS at age 5, she experienced delayed initiation of growth hormone therapy and inconsistent follow-up due to a lack of insurance and low health literacy. At her initial visit, a physical examination revealed characteristic TS phenotypes, including short stature and webbed neck. Blood pressure was elevated at 160/129 mmHg, and a bone density scan confirmed early-onset osteoporosis with significantly low z-scores across the lumbar spine (-3.6), femoral neck (-2.5), and total hip (-2.7). Laboratory tests revealed vitamin D deficiency and estradiol levels were undetectable (<5), reflecting poor adherence to HRT.

The patient was started on vitamin D supplementation, estradiol, and progesterone to address hormonal deficiencies. After consultation with endocrinology, bisphosphonate therapy (alendronate 70 mg weekly) was initiated to mitigate fracture risk. Follow-up appointments were scheduled to monitor therapy adherence and BMD progress.

Discussion

The management of osteoporosis in TS patients is complex, requiring a combination of pharmacological and lifestyle interventions. This case stresses the value of hormone replacement and vitamin D optimization while assessing the effectiveness of bisphosphonate therapy in improving bone health.

Additionally, OMT techniques such as functional and soft tissue approaches may enhance joint mobility, proprioception, and postural stability, reducing fracture risk and improving quality of life. By addressing hyperkyphosis and muscle weakness, OMT could complement medical treatments to optimize outcomes. This case also highlights the critical role of addressing social determinants of health, such as insurance access and health literacy, which can significantly impact adherence to preventative care.

Outcomes/Conclusions

We hope that a multidisciplinary approach incorporating endocrinology consultation, tailored HRT, bisphosphonate therapy, and potentially OMT will result in improved adherence and stabilization of BMD in this patient. This case highlights the importance of addressing patient-specific barriers, including health literacy and access to care, while integrating innovative treatments like OMT. Future follow-up will be crucial to evaluate the long-term effectiveness of these interventions in improving health outcomes for young TS patients with early-onset osteoporosis.

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Spontaneous Uterine Rupture with Concurrent Uterine Vessel Rupture and Massive Hemoperitoneum Following Non-Operative Vaginal Delivery: A Rare Case Report

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Objectives

- Highlight the critical importance of early recognition and management of postpartum hemorrhage due to uterine rupture in patients without a history of uterine surgery.
- Enhance understanding of the diagnostic and therapeutic challenges associated with uterine rupture in an unscarred uterus, emphasizing the pivotal role of multidisciplinary care in optimizing maternal outcomes

Introduction

Postpartum hemorrhage (PPH) remains one of the leading causes of maternal morbidity and mortality worldwide, with early identification and timely intervention crucial for improving outcomes[1]. One serious cause of PPH is a uterine rupture. Overall uterine rupture rates are 1 in 1,235-4,366, with primary uterine rupture estimated at around 1 in 16,840-19,7654 in developed nations [2,3]. This can be a cause of life-threatening postpartum hemorrhage (PPH) and typically occurs in the presence of prior uterine surgery. Its occurrence in an unscarred uterus presents unique diagnostic and therapeutic challenges. Management of uterine rupture often requires a multidisciplinary team approach, particularly when facing complex complications such as uterine trauma or vascular injury.

Case Description

- The patient was a G4P2012, 38W6d, who presented with spontaneous rupture of membranes, which was augmented with oxytocin. She delivered a healthy baby boy but experienced postpartum hemorrhage, initially managed with IM Methergine, Pitocin, Cytotec, and uterine massage.

- The patient became light-headed and less responsive, with uterine atony and significant blood loss. Her hemoglobin dropped from 11.5 to 7.4, and her systolic blood pressure fell to the 30s. Norepinephrine was administered, and a rapid response team was called for a mass transfusion protocol. This resulted in 18 units of PRBC, 12 units of FFP, three units of cryoprecipitate, and three units of platelets.

- The patient was taken for an emergent exploratory laparotomy, revealing a posterior uterine rupture involving the posterior venous plexus. A supracervical hysterectomy was performed, with general and vascular surgery called in to assist in controlling the venous avulsions.

- The patient was then transferred to another nearby medical center's interventional radiology team, where another laparotomy was performed to remove packing and address ongoing bleeding.

- Postoperatively, she developed an ileus and required an NG tube. The patient stabilized and was discharged on day 7.

Discussion

- This case presents a rare and life-threatening postpartum hemorrhage due to posterior uterine wall rupture in a patient without prior uterine surgery. It emphasizes the need for early recognition and immediate intervention to optimize maternal outcomes.

- Identifying a somatic dysfunction and its management using osteopathic principles and examining the abdominal tenderness and guarding provide additional clinical context [4].

- The primary work-up included imaging and laboratory tests to rule out other causes of postpartum hemorrhage, such as uterine atony, retained placenta, and cervical lacerations. Uterine rupture was confirmed through exploratory laparotomy.

Outcomes/Conclusions

- Uterine rupture, though traditionally linked to prior uterine surgery, can also occur in an unscarred uterus.
- In the setting of postpartum hemorrhage complicated by pain and hemodynamic instability, uterine rupture should be considered in the differential diagnosis and managed with prompt intervention.

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Late Onset of Complete Heart Block following Transcatheter Aortic Valve Replacement: A Case Report

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Objectives

The objective is to discuss a rare variant of a Transcatheter Aortic Valve Replacement (TAVR) complication and highlight its presentation, risk factors, evolving management, and clinical significance.

Introduction

TAVR has become a popular alternative treatment for severe aortic stenosis in patients at intermediate to high surgical risk[1]. One of the frequent complications of TAVR are atrioventricular conduction abnormalities (AVCA), most commonly new onset Left Bundle Branch Block (LBBB) and various degrees of AV nodal blocks[2]. These manifest as lightheadedness, dizziness, presyncope, dyspnea, or palpitations. Although AVCA usually occurs in the acute post operative setting, delayed presentations one year after TAVR have been described, but are rare[3].

Case Description

A 69-year-old male, history of HTN, CAD, HLD, and severe aortic stenosis, one year s/p TAVR, presented to the emergency department for lightheadedness, dizziness, and presyncope. His symptoms have been progressively worsening for two weeks and are exacerbated with exertion. He was seen the day prior in Cardiology clinic for his symptoms and placed on a 7-day cardiac monitor. Over the next 24 hours, the patient's monitor recorded 2 prolonged pauses with symptoms, prompting evaluation in the ED.

Vitals significant for intermittent bradycardia, 55 bpm, and hypertension, 162/96 mmHg. Patient in no acute distress with regular rhythm on exam. Symmetric pulses and clear lungs bilaterally. ECG revealed a sinus rhythm with LBBB, unchanged from prior, one month after TAVR. Serum electrolytes unremarkable. Patient was evaluated by Cardiology and diagnosed with complete heart block (CHB). Medication and ischemic heart disease as alternate etiologies were less likely as patient was not taking beta or calcium channel blockers, and his most recent echocardiogram revealed no structural abnormalities. He was admitted for permanent pacemaker implantation (PPM) and 24-hour telemetry monitoring. Discharged in stable condition the following day.

Discussion

AVCA is one of the five major complications of TAVR and impacts quality of life and mortality[4,5]. The mechanism involves mechanical stress, inflammation, and ischemia disrupting the heart's electrical conductivity[2]. Diagnosis is made through ECG and telemetry, and treatment is PPM. AVCA typically present shortly after TAVR and are treated during the index hospitalization. Although new onset LBBB can precipitate CHB and PPM, one study found that only 6.7% of TAVR patients were diagnosed with CHB after discharge[6]. CHB more than one month after TAVR is a very rare variant[7]. In patients with risk factors for CHB like LBBB, male sex, and valve prothesis type, recent data suggests continuous cardiac monitoring and early PPM to prevent adverse outcomes[8]. Patients who undergo PPM after TAVR may benefit from OMT's antiarrhythmic properties[9].

Outcomes/Conclusions

The mainstream utilization of TAVR increases the incidence of AVCA in patients treated for aortic stenosis. This case highlights the importance of identifying risk factors and symptomatology of CHB after TAVR. A provider's suspicion for the development of arrhythmias should extend past the acute post-operative period into years post-TAVR. Consistent follow-up after TAVR is imperative to monitor symptoms and prevent sudden cardiac death.

Acknowledgments/Disclosures

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Progressive Multifocal Leukoencephalopathy in an HIV Patient with Negative JC Virus PCR

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Objectives

This case highlights the diagnostic and therapeutic challenges of Progressive Multifocal Leukoencephalopathy (PML) in immunosuppressed individuals, specifically with human immunodeficiency virus (HIV)/acquired immunodeficiency syndrome (AIDS). It underscores the need for clinical suspicion when faced with progressive neurological deficits and negative John Cunningham (JC) virus in cerebrospinal fluid (CSF), emphasizing brain biopsy as the definitive

diagnostic tool [1]. The case also explores the potential efficacy of adjunctive therapies while proposing osteopathic manipulative treatments (OMT) to enhance immune restoration [2].

Introduction

Previously, the HIV/AIDS epidemic presented immense challenges for physicians, including those in rural areas with limited resources. Early efforts focused on education and managing opportunistic infections, as HIV therapies were limited [2]. Antiretroviral therapy (ART) has revolutionized HIV care, transforming it into a manageable chronic condition. Despite significant advances, severe immunosuppression predisposes patients to conditions like PML, a rare disease caused by JC virus reactivation [3]. It presents progressive neurological deficits and characteristic magnetic resonance imaging (MRI) findings, but false-negative JC virus polymerase chain reaction (PCR) in CSF can necessitate brain biopsy for diagnosis [4]. With no effective prophylaxis or treatment, management focuses on immune restoration via ART [5]. Adjunctive therapies like mirtazapine and intravenous immunoglobulin (IVIG) are sometimes used, though their efficacy remains uncertain [6]. Prognosis remains poor, largely dependent on immune reconstitution [7].

Case Description

A 47-year-old African American female with newly recognized long-standing HIV presented with two months of progressive confusion, altered mental status, and weight loss. Labs revealed pancytopenia, a CD4 count of 53, and an HIV RNA viral load of 485,648 copies/mL. Brain MRI showed nonspecific T2/FLAIR hyperintensities, and CSF was negative twice for JC virus PCR. Bone marrow biopsy revealed normocellular marrow. A brain biopsy confirmed PML. Treatment included ART, mirtazapine, IVIG, and seizure prophylaxis. Despite immune improvement, the patient's cognitive deficits and incontinence persisted, highlighting the guarded prognosis of PML.

Discussion

PML, caused by JC virus reactivation, mimics other neurological conditions like HIV encephalitis or CNS lymphoma [3]. Diagnostic work-up includes MRI and JC virus PCR in CSF, though brain biopsy remains definitive [1]. Mirtazapine inhibits JC virus from entering serotonin receptors, though its impact on outcomes is limited [5]. IVIG aids immune reconstitution by modulating immune responses, but its efficacy in altering PML progression remains unclear [6]. OMT, particularly lymphatic pump treatment (LPT), may complement immune restoration strategies by enhancing lymphatic circulation, redistributing immune mediators, and reducing inflammation [7]. LPT could bolster immune surveillance, offering a promising osteopathic approach to improve outcomes [2].

Outcomes/Conclusions

This case emphasizes maintaining high suspicion for PML in advanced HIV/AIDS with progressive neurological symptoms. Despite repeated negative JC virus PCR in CSF, definitive diagnosis via brain biopsy underscores its value when non-invasive diagnostics fail. Treatment requires immune reconstitution via antiviral therapy and adjunctive therapies like mirtazapine and IVIG, though prognosis remains guarded and depends on immune recovery. Additionally, osteopathic approaches to modulate immunity offer a promising avenue for adjunctive treatment in PML management.

Acknowledgments/Disclosures

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From Insect Bite to Life-Threatening Disease: Posterior Neck MRSA Abscess

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Objectives

This case study focuses on the management of posterior neck abscess caused by Methicillin-Resistant Staphylococcus Aureus(MRSA), which developed after an insect bite. The objective is to explore the timely recognition, need for diagnostic imaging, and surgical intervention necessary to effectively address this condition and prevent life threatening complications from MRSA related severe infections. We hypothesize that early detection, use of imaging to assess severity of the infection, and prompt surgical intervention are essential in minimizing morbidity and mortality from MRSA-infected posterior neck abscesses.

Introduction

This case highlights the serious consequences of MRSA infections, which can destroy skin, tissue and potentially spread throughout the body. MRSA infections often originate from minor skin injuries, such as insect bite, as in this case. The initial injury progressed into a large midline-crossing posterior neck abscess, illustrating how quickly the infection can spread. MRSA is one of the most common causes of skin and soft tissue infections that if not treated adequately can progress to more severe infections including abscess formation, septicemia, and necrotizing fasciitis. Due to MRSA's resistance of standard antibiotics and aggressive nature, timely treatment intervention is crucial. This case emphasizes early detection, imaging, and surgical intervention to preventing life threatening complications from MRSA infected abscesses and improve patient outcomes.

Case Description

A 37-year-old unhoused male presented to the hospital with a 7cmx5cm posterior neck draining abscess, crossing the midline (Figure1). Upon surgical consult, the patient was hemodynamically stable with an erythematous, edematous and painful abscess. CT imaging revealed a deep abscess with superficial dorsal phlegmon and necrotic tissue(Figure2). The patient underwent under general anesthesia for incision and drainage with manual irrigation and sterile pulse irrigation unit for cleaning cavity of pus and removing of necrotic tissue(Figure3,4). Postoperatively, in the ICU, the patient received daily sterile dressings and IVVancomycin suggested by wound culture microbiology sensitivity results(Figure5) to effectively control the MRSA infection.

Discussion

This case demonstrates successful management of an MRSA abscess through surgical debridement and targeted antibiotic therapy. Preoperative wound cultures confirmed the presence of MRSA, while surgical pathology revealed acute inflammation and necrosis confined to superficial tissues.By post-op day 7, significant control of MRSA and wound healing was achieved, and he was discharged with oral Bactrim and follow up care to clinic and potential skin grafting(Figure6).

Outcomes/Conclusions

The primary outcome was the effective control of the MRSA infection through surgical debridement and antibiotic therapy, minimizing systemic complications. This case highlights the critical importance of early recognition and timely intervention in managing MRSA abscesses to prevent life-threatening complications. It emphasizes addressing social determinants of health and improving access to healthcare and hygiene, as early wound care were crucial factors in preventing progression. Further research integrating osteopathic manipulative treatment with standard care and developing strategies for early recognition of MRSA is recommended. In conclusion, this case highlights the importance of a multidisciplinary approach that combines clinical expertise, patient education, and efforts to address systemic barriers to care to improve patient outcomes.

Acknowledgments/Disclosures

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Liposclerosing Myxofibrous Tumor: A Rare Association with Avascular Necrosis of the Femoral Head

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Objectives

This case report describes the first known association, to the author's knowledge, between Liposclerosing Myxofibrous Tumor (LSMFT) and avascular necrosis (AVN), detailing the clinical presentation, imaging, diagnosis, and management.

Introduction

Liposclerosing myxofibrous tumor (LSMFT), a rare benign tumor, was first described by Ragsdale and Sweet in 1986 [1-5]. LSMFTs are usually found incidentally on radiographs, computed tomography (CT), or magnetic resonance imaging (MRI) with similar prevalence in both sexes [2, 3, 6, 7]. Histopathologic analysis may show myxofibrous tissue, fibrous dysplasia-like features, and ischemic ossification, raising debate on whether LSMFT is a distinct entity or a variant of fibrous dysplasia or intraosseous lipoma [3, 6, 8, 9]. Most LSMFTs occur in the proximal femur, with occasional cases in the distal femur and cranial vault, and complications are rare, apart from occasional malignant transformations [1, 3, 4, 6, 7, 9].

Case Description

A 42-year-old woman with a past medical history of alcoholic liver disease on chronic prednisone therapy presented with progressive left hip pain over three months. Examination revealed pain on internal and external rotation, reduced range of motion, positive log roll, and a positive flexion, abduction, and external rotation (FABER) test in the left hip, with intact skin sensation and lower leg strength. Radiographs showed a 3.6 cm sclerotic lesion in the left femoral neck, unchanged from a CT scan two years prior, with cortical irregularity suggestive of AVN. Follow-up MRI revealed instability of the superior femoral head with cortical breakthrough, and a mixed sclerotic-cystic lesion in the left femoral neck consistent with LSMFT. Pathologic evaluation of the lesion confirmed features of LSMFT.

Discussion

LSMFTs are most often discovered incidentally through radiographs or MRI, as in the patient in this case [3]. Radiographs show lytic lesions with sclerotic borders, and MRI T1-weighted images reveal moderate homogeneity, with high-intensity heterogeneity on T2-weighted images [6, 9]. Histologically, LSMFTs show a mix of features like lipoma, myxoma, fibrous dysplasia, and fat necrosis, complicating diagnosis [3, 5, 8]. The most common complications of LSMFTs include bone pain, pathological fractures, and malignant transformation. This case introduces a previously unrecognized complication—avascular necrosis (AVN), a condition most often caused by hip fractures, corticosteroid use, or alcohol abuse [10-12]. AVN can be diagnosed clinically or via MRI. The combination of corticosteroid use, alcohol abuse,

and the growing LSMFT may increase the risk of AVN by further reducing blood flow to the femoral head. Treatment for AVN and LSMFT may involve core decompression or arthroplasty for symptomatic cases, with surgical management being the primary approach for LSMFT [3, 10]. Both conditions generally have favorable outcomes with hip arthroplasty [13].

Outcomes/Conclusions

LSMFTs are rare, benign tumors linked to complications such as malignant transformation, bone pain, and pathological fractures. They may also increase the risk of AVN in the femoral head due to lesion growth, which reduces blood flow. Patients with LSMFT should be closely monitored for AVN, especially if they have risk factors like prolonged corticosteroid use or alcohol abuse.

Acknowledgments/Disclosures

None

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Optimization of Abdominal Surgery and Controlling Intractable Neuropathic Pain with Peri-operative OMT

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Objectives

The objective is to demonstrate the effectiveness of utilizing OMT as part of a patient's perioperative care in a patient with existing chronic neuropathic pain and intractable migraines. This case study will demonstrate how OMT, coordinated before surgery, can reduce chronic pain exacerbations and accelerate recovery.

Introduction

Perioperative medicine is multidisciplinary, patient centered care that extends from contemplation of surgery to the recovery process. OMT effectiveness in patients with existing chronic neuropathic pain following invasive procedures is not commonly discussed. However, surgically Induced Neuropathic Pain (SNPP) happens in 20% of patients after hernia repair. Viscerosomatics are involved in pain pathways that propagate and feed forward a continuous loop: a maladaptive reflex known as segmental facilitation. Optimizing visceral structure, circulation, and lymphatics before surgery can help promote wound healing but also blunt this reflex arc.

Case Description

A 37-year-old man with a history of intractable migraines, Arnold Chiari I malformation, and multiple previous abdominal surgeries presented with right testicular pain, migraines, and global neuropathic pain. His previous left inguinal hernia repair in 2020 caused him over four weeks of daily unremitting

migraines and postsurgical abdominal pain which severely affected his ADLs, unable to properly care for himself. His peripheral neuropathic pain and migraines started in 2014 after an MVA, but was magnified after this surgery in 2020, worsening ever since. He takes daily oxycodone, meloxicam, gabapentin, and PRN butalbital. The patient had scheduled his right inguinal hernia repair with a plan to undergo OMT perioperatively.

Discussion

The patient was treated with OMT one month and one week before surgery and then two weeks postop with emphasis on visceral, craniosacral, and lymphatic techniques. The treatment protocol began with rebalancing the autonomic nervous system using craniosacral. During the initial evaluation, the patient had slow CRI with low amplitude and global hyperalgesia which were corrected with suboccipital release, myo-dural bridge technique, CV4, venous sinus drainage, and craniosacral balanced membranous tension. Once the patient developed an increased tolerance to manual manipulation, the next visit incorporated rebalancing and mobilization of pelvis, sacrum and visceral structures. For lymphatics, thoracic inlet was released, followed by respiratory and pelvic diaphragms.

During the 2-week post-op follow-up, the patient exhibited a significant comparative decrease in recovery time, along with zero abdominal pain and had an overall reduction of migraine episodes by 50%. His general pain was subjectively reduced by two points on his pain scale by two weeks postop which achieved his functional goal to at least be able to perform ADLs.

Outcomes/Conclusions

This study interestingly highlighted OMT effectiveness applied before surgery, rather than the more common postoperative OMT intervention. Optimizing this patient's visceral structure, autonomics, and circulation in the perioperative period not only reduced his recovery time but spared him from repeated debilitating pain. This case is also an example of how viscerosomatics plays a role in segmental facilitation and how OMT can be utilized prophylactically. Further studies may elucidate the benefits of coordinating OMT perioperatively to optimize patient recovery with other procedures.

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When a "Safe" Toy Turns Dangerous: A Case of Permanent Vision Loss due to Intraretinal Microvasulcar Abnormalities from a Laser Burn

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Objectives

Laser pointers are commonly used for educational and recreational purposes, but improper use can lead to severe ocular injuries, including permanent vision loss. This case highlights the risks of laser pointers marketed to pediatric demographics as “safe,” discusses the mechanisms of laser-induced retinal injury, and underscores the importance of public awareness and regulation

Introduction

Prevention through public education and government policy is a major tenet of holistic medical care. Despite being marketed as “safe,” many consumer-grade lasers significantly exceed safety thresholds set by regulatory agencies such as the U.S. Food and Drug Administration, which caps the output of Class II and Class IIIa lasers at 5 mW for visible light1. However, studies have shown that many inexpensive, widely available lasers labeled under these categories emit far higher power levels, posing a serious risk of retinal damage2.

Case Description

An 18-year-old female with no previous ocular pathology presented to the ophthalmology clinic with a complaint of acute loss of vision in one eye when a red laser pointer was directed into her eye for 30 seconds by her younger sibling. Fundus photography showed diffuse macular and foveolar damage with retinal pigment epithelium whitening and a lesion in the macula consistent with prolonged laser exposure and total blindness. Line scan showed loss of outer retinal layers and fibrinoid subretinal deposition in the foveal region. Her vision did not return with subsequent visits, and in the end proved to be permanent central vision loss.

Discussion

Epidemiological data on laser-induced blindness are sparse. Case reports have shown incidence of laser-induced blindness in many populations, including military and industrial as well as pediatrics3-10. Pediatric cases are particularly concerning due to children's curiosity and limited understanding of the dangers associated with laser exposure. This report underscores the need for stricter regulations on laser manufacturing, improved labeling, and public education on the safe use of lasers. For medical students and healthcare providers, understanding the classification and risks associated with lasers is crucial for both patient education and management of injuries.

Laser-induced retinal injury occurs primarily through two mechanisms: thermal damage and photochemical injury. Thermal damage results from concentrated energy absorption in retinal tissues which leads to coagulative necrosis, while photochemical injury is caused by prolonged exposure to lower-intensity light, generating reactive oxygen species that damage photoreceptor cells and the retinal pigment epithelium. The macula is the most vulnerable due to its role in central vision and high concentration of melanin and lipofuscin, which readily absorb laser energy.

Outcomes/Conclusions

Diagnosis of laser-induced retinal injury requires a thorough history focused on details such as laser wavelength, power, and duration. Unfortunately, treatment options for laser-induced ocular damage are limited, with outcomes often dependent on the severity of initial injury. Given this, prevention measures should be aimed towards public education and government regulation.

Acknowledgments/Disclosures

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A Case of Atypical Dense Pulmonary Opacity on Chest Radiography Concerning for Malignancy vs Abscess

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Introduction

Pneumonia is a common illness afflicting older patients for various reasons, including impaired gag reflex, waning immunity, impaired febrile response, decreased mucociliary function, and cardiopulmonary dysfunction. Common organisms infect most patients suffering from community-acquired pneumonia. However, a subset of the population remains at increased risk for infection with atypical organisms that may cause vague, systemic symptoms compared to the localized symptoms of "typical" pathogens. In diagnosing pneumonia, radiographic visualization of the infiltrate in the clinical context of the patient's presentation is considered the gold standard. Occasionally, a chest x-ray (CXR) cannot sufficiently demonstrate an infiltrate, so more advanced imaging is required. Conversely, findings visible on CXR occasionally require further characterization with more advanced imaging, such as computerized tomography (CT) imaging. Pneumonia can quickly progress to the formation of a pulmonary abscess if untreated. This results in worsening infection and radiographic findings that may be concerning for more serious conditions, including neoplasm, pulmonary embolism, or cavitary lesion.

Case Description

A 63-year-old otherwise healthy male presented and was seen in the emergency department (ED) for four months of productive cough with fever and nocturnal diaphoresis. He was febrile and tachycardic, meeting SIRS criteria, and a sepsis alert was triggered with blood cultures drawn and treatment

initiated. On physical examination, he had decreased breath sounds in the right upper lung field. During his subsequent evaluation, he was found to have an atypical dense opacity on plain film chest radiography (CXR) that was initially alarming for potential neoplastic mass lesion vs. atypical consolidation vs. cavitary lesion.

Further history was taken to rule out several additional potential risk modifiers that could have led to the patient's illness. A CT angiography study of the chest was ordered to assess for septic pulmonary embolism (PE) and further characterize the lesion. The study revealed no PE, and, though malignancy was not excluded, the mass was believed to be most consistent with pulmonary abscess.

Additionally, laboratory studies were conducted to assess potential sources of infection. A respiratory panel was ordered, as well as testing for influenza A/B and COVID-19, MRSA/MSSA, Mycobacterium tuberculosis, Cryptococcus, Coccidioides, Legionella pneumophila, and Streptococcus pneumoniae. The patient was incidentally found to be COVID-19 positive. A complete blood count showed leukocytosis, and his procalcitonin was elevated.

Given the severity of the patient’s illness, the patient was admitted to the hospital for sepsis in the setting of abnormal pulmonary imaging. At discharge, all laboratory studies were negative, and the patient was started on a six-week course of amoxicillin-clavulanate and instructed to follow up in four weeks.

Outcomes/Conclusion

This report presents a unique case of an atypical dense pulmonary opacity seen on CXR imaging in the setting of a prolonged unexplained illness in a 63-year-old male patient. Initial CXR was concerning for neoplasm, though the mass was ultimately found to be consistent with pulmonary abscess on CTA. Furthermore, it highlights the importance of thorough history-taking and keeping a broad differential diagnosis, which necessitates a strong command of what laboratory studies are warranted for a thorough investigation.

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Compression Therapy Challenges: Intriguing Case of Recurrent Venous Leg Ulcers in Chronic Venous Insufficiency

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Objectives

With a growing aging population and increased barriers in maintaining treatment adherence in the elderly population, primary care physicians may increasingly encounter venous leg ulcers (VLUs) as a complication of chronic venous insufficiency (CVI). This case report aims to highlight the clinical challenges of managing recurrent VLUs in an elderly patient with CVI, emphasizing the importance of compression therapy adherence, early intervention, and patient education.

Introduction

CVI is a condition characterized by lower extremity impaired venous blood flow generally related to valve dysfunction. CVI is associated with risk factors such as age, female sex, BMI, tobacco use, family history, sedentary lifestyle, and oral contraceptives. In rare cases, CVI may lead to VLUs, accounting for approximately 60-80% of ulcers and result from venous pressure damaging surrounding vessels.

Case Description

An 88 year-old Hispanic female presented to the office with left lower leg tenderness and purple-red discoloration for 10 days. Past medical history included CVI, cardiomyopathy, hypertension, dyslipidemia, and left-sided hemiplegia post-cerebral infarction. Patient appeared in moderate distress. Varicosities were noted on shins and calves bilaterally. On the left lower leg, there was a stage 4 ulcer on the medial malleolus approximately 1 cm in diameter and 2 mm in depth with purulent discharge and mild granulation tissue. The left lower leg was erythematous with purple-red discoloration and peeling that extended to mid-calf with induration tenderness and pain on left calf palpation. Management plan included compression therapy until next visit and education regarding leg elevation. 12 days later, the patient presented with ulcer improvement to stage 3. Patient was instructed to maintain compression therapy indefinitely and follow-up every 2 weeks.

However, after approximately 60 days of non-adherent compression, the patient presented with increased lower left leg tenderness, skin flaking, purple-red discoloration, and a new stage 2 VLU. Patient was scheduled for weekly appointments and educated on long-term compression. After approximately 30 days of strict continuous compression therapy, the ulcer diminished to stage 1.

Discussion

Compression therapy with medical compression stockings remains the gold standard treatment for VLUs, and patients tend to achieve a 40% ulcer healing rate in three months. Lymphatic osteopathic

manipulative treatment (OMT) protocols including techniques such as myofascial thoracic outlet release are a potential treatment, with wound surface area decreasing by an average of 4.9 cm^2/week in one study.

Differentials include arterial ulcers, diabetic ulcers, and pyoderma gangrenosum. Diagnosing CVI and identifying a VLU includes various approaches, such as a thorough physical examination and duplex ultrasound. VLU recurrence is significant, with 80% of patients experiencing ulcers again within three months. Maintenance of compression therapy is a challenge, with less than 33% of patients adhering as prescribed and 28.3% utilizing compression therapy intermittently.

Outcomes/Conclusions

This case emphasizes the role of consistent compression therapy in VLU management and prevention of recurrence. Despite initial improvement with compression, non-adherence led to recurrence, emphasizing the need for sustained patient education and regular follow-up. OMT is another option, allowing for improved lymphatic and venous flow.

Acknowledgments/Disclosures

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Complications of Otitis Media in an Adult: Progression to Brain Abscess and the Impact of Social Barriers

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Objectives

This case highlights bacterial meningitis, mastoiditis, and a subdural empyema as complications of otitis media in an adult male living in New York. Otitis media is uncommon in adults, and subdural empyema is a rare but life-threatening sequelae.[1] As bacterial meningitis and subdural empyemas are life threatening conditions that require time-sensitive treatment, bringing awareness to atypical presentations can help encourage efficient and adequate management. Additionally, understanding the role of social determinants of health (SDOH) in delayed treatment is critical to addressing disparities in healthcare outcomes.[2]

Introduction

Acute Otitis Media (OM) is a common childhood ailment, affecting roughly 80% of children during their lifetime, with the majority of cases occurring between 6-24 months of age.[3] In contrast, the incidence of OM among adults aged 25-85 is 1.5-2.3%.[1] OM often follows a viral upper respiratory infection, leading to inflammation-induced obstruction in the middle ear, which can facilitate bacterial colonization.[4] Prompt and accurate diagnosis of OM is essential to prevent complications while recognizing SDOH is equally crucial for improving patient outcomes.

Case Description

A 33-year-old man presents with fever, headache, ear pain, and confusion after Emergency Medical Services (EMS) found him unconscious, with drainage from his left ear. According to his family, the patient complained of feeling unwell for 5 days, but avoided seeking medical treatment due to lack of insurance. The patient's prior medical history included asthma, for which a steroid inhaler was used as needed.

In the Emergency Department (ED), he had a seizure and was intubated and medicated with IV Ativan and Keppra. On the physical exam, no neck stiffness was noted and reflexes were preserved symmetrically.

Following admission, an otolaryngologist performed a left ear myringotomy, along with the insertion of a pressure-equalizing tube. Following this procedure, ear and blood cultures revealed Group A Strep, prompting treatment with IV ceftriaxone. Brain MRI demonstrated fluid within the mastoid air cells and brain abscess, leading to emergency craniotomy with abscess removal and mastoidectomy. The patient improved following the procedure and antibiotic course.

Discussion

Differential diagnosis of the patient's presentation was broad; including meningitis, convulsive syncope, and drug overdose. Considerations of possible etiologies prompted CT, MRI, and lumbar puncture which confirmed diagnosis of subdural empyema in the left superior parietal lobule. Factors such as delayed care, often influenced by SDOH like lack of insurance, exacerbate the risk of severe complications. Additionally, utilization of Osteopathic Manipulative Medicine (OMM) may be a beneficial adjunct to standard treatment for underserved patients, potentially reducing mortality.[5]

Outcomes/Conclusions

The dangerous sequelae of OM highlights the need for timely recognition and treatment, especially among vulnerable populations. Untreated OM complications, such as mastoiditis, meningitis, subdural empyema, and seizures, can lead to high morbidity and mortality.[6] Recognizing the SDOH that contribute to disparities in healthcare access and outcomes is essential for mitigating the burden of OM and its associated complications. Efforts to expand healthcare access, promote education, and address socioeconomic disparities, can have an impact on improving health outcomes.

Acknowledgments/Disclosures

No disclosures

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Biliary atresia treated with Kasai procedure in a 2-month-old

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Objectives

Universal screening tools for biliary atresia (BA) are lacking in our current healthcare system, therefore, leading to later diagnosis and suboptimal timing of the current gold standard treatment.

Introduction

Biliary atresia is a rare genetic condition that impacts the intra- and extrahepatic biliary system within neonates, causing continuous fibrosis and obliteration of the biliary tree [1]. The prevalence in the United States is around 1 in 12,000 live births; the most common subtype is nonsyndromic [2]. The complications of this condition result in jaundice, hyperbilirubinemia, acholic stool, dark urine, cholestasis, and liver failure requiring a liver transplant [3]. The current gold standard treatment is the Kasai hepatoportoenterostomy, with greater survival rates if performed before 45 days of life [3].

Case Description

We present a case of a 2-month-old female with persistent jaundice, failure to thrive, pale-colored stool who was diagnosed with biliary atresia and received a Kasai procedure at 60 days of life. This is notably at an age that exceeds the age known to have the greatest survival outcome rate. Our patient did not receive any BA specific screenings and had a normal neonatal screening.

Discussion

There are challenges in BA's early diagnosis due to its rare presentation and the potential that persistent neonatal jaundice can be mistaken for physiologic jaundice [4]. In cases where there is suspicion for biliary atresia due to persistent jaundice, failure to thrive, or alcoholic stools, an ultrasound of the hepatic system has been commonly accepted as a test to rule out biliary atresia if the common bile duct is visualized. Alongside ultrasound modalities, HIDA scans that show no contrast within the small bowel are highly sensitive for BA [4]. Due to the condition's impact on the liver and gallbladder, Chapman points found at the right fifth through seventh intercostal space could potentially be palpated [5]. Screening tools, such as a stool color card, fractionated bilirubin, and bile acid testing, which could help in the early diagnosis of biliary atresia, have not been universally implemented [5->6].

Outcomes/Conclusions

With the overwhelming knowledge that early diagnosis, and thus the potential to perform the Kasai procedure early in life, leads to greater survival, it is clear that a universal screening tool for BA is necessary. There has been support for using stool color card, fractionated bilirubin, and bile acid testing, although there is no clear current infrastructure to support their implementation. This case report involved a 2-month-old patient who received a Kasai operation after the current recommended age for intervention leading to improved survival.

Acknowledgments/Disclosures

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Neurotoxic Sequelae of a Recluse Spider Bite: A Rare Case of Transverse Myelitis

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Objectives

- Recognize and evaluate atypical neurological presentations by integrating environmental and exposure history to identify potential causes, such as venom-induced neuroinflammation.
- Diagnose and differentiate rare neurotoxic complications of recluse spider envenomation, including transverse myelitis, from other neurological conditions like Guillain-Barré Syndrome or infectious meningitis through clinical findings, cerebrospinal fluid (CSF) analysis, and advanced imaging techniques.

Introduction

Recluse spiders, primarily known for their potentially severe toxicity, can induce a condition termed Loxoscelism, marked by diverse clinical manifestations. In the southwestern United States, the Desert Recluse predominates, bearing toxicity comparable to the Brown Recluse. While the majority of bites lead to minor irritation, only 10–20% result in necrosis. Neurological complications are exceedingly rare, but cases have been documented. A 2022 report detailed facial nerve palsy following a Brown Recluse bite to the neck, while another described progressive lower extremity weakness after a bite to the inguinal region. Such cases highlight the underrecognized potential for neurological sequelae from recluse spider envenomation.

Case Description

In 2024, a 74-year-old male presented to a VA Emergency Department (ED) with dizziness, presyncope, malaise, and severe difficulty ambulating, despite consistent physical therapy. His symptoms traced back to a recluse spider bite sustained during a 2022 hiking trip. The bite, located on his spine, was suspected to facilitate venom entry into the CSF, triggering neuroinflammation and subsequent neurological decline.

Initially, he sought care in 2022 for acute leg weakness, fever, chills, neck stiffness, and malaise. Examination revealed bilateral lower extremity weakness, diminished reflexes, and a wide-based antalgic gait. Vital signs included a temperature of 101.2°F, HR 94, BP 159/78, RR 16, and SpO2 95% on room air. Lab results showed WBC 13.4, CRP 3.20, and lactic acid 3.7. Thoracic and lumbar MRIs were unremarkable, and lumbar puncture ruled out infectious meningitis but showed albuminocytologic dissociation. Despite treatment with intravenous fluids, steroids, and antibiotics, his deficits persisted. Electromyography (EMG) findings were normal, and Lyme disease, syphilis, and vasculitis tests were negative.

Over the following years, the patient experienced persistent neurological symptoms, including progressive gait instability, malaise, and recurrent ED visits for worsening ataxia and dizziness. These symptoms resulted in significant deconditioning, dependence on a walker, and reduced quality of life, underscoring the long-term consequences of the envenomation.

Discussion

Recluse spider envenomation rarely leads to severe neurological complications. This case demonstrates a scenario where venom infiltrated the CSF, causing neuroinflammation. CSF analysis revealed yellow discoloration and elevated protein levels, indicative of inflammation. Although Guillain-Barré Syndrome was initially considered, normal EMG findings and symptom progression suggested idiopathic transverse myelitis. Despite treatment, the patient's deficits persisted, highlighting the complexity of managing venom-induced neuropathology.

Outcomes/Conclusions

This case illustrates an unusual manifestation of recluse spider envenomation with severe neurological involvement. While most literature focuses on local necrosis or systemic loxoscelism, this case expands the clinical understanding of neurotoxic potential. Persistent deficits despite aggressive therapy underscore the importance of multidisciplinary care and the need for further research into targeted treatments for venom-induced neurological conditions.

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Post-Ablation Follow-Up for Supraventricular Tachycardia and Atrial Flutter: A Case Study

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Objectives

1. Highlight the clinical presentation and diagnostic approach for SVT and atrial flutter.
2. Demonstrate the efficacy of radiofrequency ablation as a definitive treatment.
3. Discuss osteopathic considerations in managing arrhythmias.

Introduction

Supraventricular tachycardia (SVT) encompasses a group of arrhythmias arising above the ventricles. It often presents with palpitations, dizziness, or syncope and significantly impacts quality of life in younger populations. Radiofrequency ablation has emerged as the gold standard for refractory cases, offering high success rates exceeding 95% in certain SVT subtypes. This case explores the role of ablation in managing refractory SVT while integrating osteopathic principles for holistic patient care.

Case Description

A 23-year-old female presented with a 1-year history of episodic palpitations, dizziness, and syncope, prompting advanced evaluation.

Key Findings:

- **History & Physical (H&P):** Intermittent episodes of rapid heart rate, associated with syncope lasting ~10 seconds. No prior surgeries or allergies.
- **Diagnostics:**
    - Electrocardiography (ECG): Confirmed SVT and atrial flutter.
    - Holter Monitoring: Documented intermittent arrhythmias.
    - Electrophysiology Study (EPS): Identified the left posterolateral accessory pathway.

Intervention:
On October 21, 2024, the patient underwent radiofrequency ablation under general anesthesia. Utilizing 3D electroanatomic mapping, the left posterolateral accessory pathway was successfully ablated.

Discussion

SVT and atrial flutter result from abnormal reentrant circuits or accessory pathways. This patient's refractory symptoms necessitated advanced management:

1. **Diagnostic Approach:**
    - **ECG:** Essential for identifying arrhythmia type.
    - **EPS:** Gold standard for mapping accessory pathways.
2. **Treatment:**
    - **Radiofrequency Ablation (RFA):**
        - Procedure involved accessing the left atrium via septal puncture, mapping the arrhythmogenic focus, and ablating the left posterolateral accessory pathway.
        - Success confirmed by absence of inducible arrhythmias post-ablation.
3. **Osteopathic Considerations:**

- Addressing thoracic and diaphragmatic somatic dysfunctions may optimize autonomic tone and support cardiovascular function.
- Osteopathic manipulative treatment (OMT) may enhance long-term arrhythmia prevention.

Outcomes/Conclusions

Clinical Implications:

- Early recognition of refractory SVT facilitates timely intervention with RFA, which boasts low complication rates and high efficacy.
- Incorporating lifestyle changes—hydration, stress management, and avoiding triggers (e.g., caffeine)—further reduces recurrence risk.

This case highlights the success of radiofrequency ablation in achieving symptom resolution and improving quality of life for patients with refractory SVT. The integration of osteopathic principles further underscores the value of holistic patient care. Key takeaways include:

1. Prompt identification of refractory SVT improves outcomes.
2. RFA is a curative, low-risk intervention.
3. Osteopathic approaches may complement conventional therapies.

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A Structural Setback- Esophageal Perforation Following Concomitant Transoral Incisionless Fundoplication (cTIF)

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Objectives

This case report aims to highlight esophageal perforation as a rare but serious complication following concomitant transoral incisionless fundoplication (cTIF) with robotic hiatal hernia (HH) repair. The objective is to inform clinicians about the diagnostic challenges and management strategies required for this complication, emphasizing early recognition and multidisciplinary care.

Introduction

Concomitant transoral incisionless fundoplication (cTIF) combines laparoscopic hiatal hernia repair with TIF to treat gastroesophageal reflux disease (GERD) in patients with hiatal hernias larger than 2 cm. cTIF uses the EsophyX which is designed to create a full-thickness valve at the gastroesophageal junction through the insertion of multiple fasteners device to create a valve at the gastroesophageal junction. While minimally invasive, cTIF carries risks, most notably esophageal perforation. Although uncommon, perforations can lead to life-threatening complications like pneumothorax and mediastinitis, requiring urgent intervention. Effective management relies on early diagnosis and multidisciplinary care, including surgery, gastroenterology, and radiology.

Case Description

A 47-year-old woman with chronic GERD and obesity underwent elective cTIF and robotic hiatal hernia repair repair for symptomatic GERD. Postoperatively, the patient tolerated a regular diet and was discharged. Four days later, she presented with shortness of breath, chest pain, and hypoxia. CT imaging revealed pneumomediastinum, bilateral pleural effusions, and extraluminal air, suggesting a perforation. She was given antibiotics and underwent robotic laparoscopic exploration, with no obvious perforation found. Despite initial stabilization, a blue-tinted output from her right JP drain following a dye challenge raised concern for a microperforation. An esophagram and subsequent imaging were inconclusive, but a KUB suggested esophageal communication with the drain. Repeat EGD revealed a mucosal rent near a fastener, which was closed with additional clips. The patient was managed with total parenteral nutrition (TPN) and closely monitored for complications. Eventually, she stabilized, and further drainage abnormalities resolved, allowing her to be discharged on TPN with strict NPO instructions.

Discussion

Esophageal perforation is a rare but significant complication of cTIF procedures, often resulting from improper fastener deployment or device manipulation at the gastroesophageal junction. Perforations can lead to severe conditions like pneumomediastinum, requiring immediate intervention, such as broad-spectrum antibiotics and surgical or endoscopic repair. In this case, the perforation was subtle and initially undetected, complicating diagnosis. The patient's persistent drainage and the subsequent finding of a mucosal rent emphasize the need for thorough follow-up and imaging. Osteopathic manipulative medicine (OMM) may have a supportive role in managing post-surgical recovery, particularly for respiratory function and tissue healing. A multidisciplinary approach, involving surgical, gastroenterology, infectious disease, and radiology teams, was essential for this patient's recovery.

Outcomes/Conclusions

This case highlights the importance of considering esophageal perforation in patients presenting with respiratory or gastrointestinal symptoms following cTIF. Although rare, perforations can lead to severe complications if not promptly identified. Early and thorough diagnostic workup, including imaging and endoscopy, is essential for management. A collaborative, multidisciplinary approach is crucial for effective treatment, and careful follow-up is necessary to address potential complications such as microperforations or fistulas.

Acknowledgments/Disclosures

None

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Endometrioid Adenocarcinoma of the Vagina in an 82-Year-old Female with a Previous Hysterectomy

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Objectives

Primary endometrioid adenocarcinoma of the vagina is a rare form of cancer. This case report recounts the clinical course of an 82-year-old female with a remote history of total hysterectomy for benign conditions presenting with primary endometrioid adenocarcinoma of the vagina. This case underscores the importance of developing and maintaining a broad differential, especially in the context of postmenopausal vaginal bleeding in patients with a history of hysterectomy.

Introduction

Primary cancers of the vagina are rare and contribute to 1%-2% of female gynecologic cancers.[1] Histologic subtypes of vaginal cancers include but are not limited to squamous cell carcinoma, adenocarcinoma, melanoma, and sarcoma botryoides. There is a limited understanding of the causes of endometrioid adenocarcinoma. Based on a study of 18 cases, the average age of a patient with this cancer type is 60 years with a range from 45 to 81.[2] The most common presenting symptom was vaginal bleeding or discharge, a majority of the cases were status post a hysterectomy, about half had known endometriosis, and a third had unopposed estrogen use. [2]

Case Description

An 82-year-old female patient presented to a primary care clinic for concerns of urinary frequency, pressure, and abdominal cramping, which were followed by blood on bathroom tissue one week later. Initial evaluation confirmed constipation; however, the bleeding was thought to be gynecologic. Pelvic exam found a 3 x 4 cm firm, friable, and immobile mass in the apex and posterior vagina. Biopsy of the mass detected Adenocarcinoma, Endometrioid Type (FIGO Grade 1). Of note, further history found her to be status post total hysterectomy in 1972 for fibroids and on long term estrogen replacement. She was diagnosed with stage 1B, grade 1 endometrioid adenocarcinoma of the vagina and completed a course of external beam radiation therapy followed by brachytherapy. Approximately nine months after initial presentation, the patient had no evidence of disease on the follow-up PET scan.

Discussion

After the onset of vaginal bleeding, the differential diagnosis included a primary vaginal tumor or metastatic disease. This patient's clinical scenario demonstrates a successful reconsideration of the diagnosis as her symptoms progressed and represents the significance of a robust differential diagnosis for identifying rare conditions. Her symptoms could have been attributed to numerous conditions, and she did not initially present with the most common symptom of endometrioid adenocarcinoma. Uterine pathology in postmenopausal patients is often the source of bleeding.[3,4] In those who no longer have a uterus, evaluation and diagnosis of postmenopausal vaginal bleeding relies on the greater consideration of less common etiologies. This approach represents an example of patient centered care, an important characteristic of osteopathic medicine. [5] Interestingly, cancer research has increasingly personalized cancer care and represents osteopathic principles.[5]

Outcomes/Conclusions

Endometrioid adenocarcinoma of the vagina is a rare malignancy that most commonly presents with vaginal bleeding or discharge. However, clinical presentation can be variable. Postmenopausal vaginal bleeding, especially in patients with a prior hysterectomy, necessitates a thorough evaluation and differential diagnosis.

Acknowledgments/Disclosures

No acknowledgements/disclosures.

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Mending the Mother and the Muscle: An Osteopathic Approach to Abdominal Pain in Postpartum Diastasis Recti

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Objectives

To examine the efficacy of osteopathic manipulative treatment (OMT) as a treatment option for diastasis rectus abdominis presenting as abdominal pain.

Introduction

Diastasis Rectus Abdominis (DRA) is a condition characterized by the separation of the rectus abdominis muscles along the linea alba. DRA occurs in peripartum women, men, and non-pregnant women, with prevalence up to 60% in six week- to 12-month postpartum women[11]. Impairments in trunk mobility, stability, posture, and respiration from DRA can cause abdominal, back, or pelvic pain with a visible or palpable abdominal bulge[3]. Current treatment options include physical therapy, while severe cases require surgical intervention[10]. Emerging approaches, such as osteopathic manipulative treatment (OMT), show promise in reducing pain and improving core stability 2,3. However, there is currently limited research on the relationship between DRA, its symptoms, and OMT.

Case Description

A 26-year-old G1P1001 female who presented with a chief complaint of abdominal pain six weeks post uncomplicated vaginal delivery. She experienced sharp, stabbing midline abdominal pain episodes rated at 7/10 that resolved over two to three hours and occur two to three times per day. She endorsed

nausea, intermittent constipation, and abdominal weakness, but denied sore throat, vomiting, or diarrhea. Her past medical history was significant for an emergency department (ED) visit for 10/10 abdominal pain the day before presentation to the family medicine clinic.

Discussion

ED workup showed DRA on CT abdomen/pelvis; imaging and laboratory work was otherwise unremarkable and she was discharge with a diagnosis of abdominal pain of unknown etiology and instructions to take 10 milligrams of Pepcid daily. . Her physical exam in clinic was significant for moderate epigastric tenderness and increased inter-rectus distance (IRD) of four centimeters by direct measurement. Notable osteopathic structural exam findings were somatic dysfunctions of the cervicothoracic junction, ribs, pelvis, and abdominal wall. Her final diagnosis was generalized abdominal pain in the setting of diastasis recti and somatic dysfunction of all body regions.

We treated the patient at six visits over two months with OMT. We first resolved her postural dysfunctions with treatments to the thoracic spine, lumbar spine, and pelvis. Next, we targeted autonomic overactivation with treatment to the sacrum, suboccipital region, and paraspinal musculature. We addressed restricted diaphragmatic biomechanics with treatment to the cervicothoracic, respiratory, and pelvic diaphragms. To unwind myofascial strain in the cranial region, we treated the occipital bones and cranial fascia.

Outcomes/Conclusions

After visit six, she discontinued her Pepcid due to improvement in abdominal pain. At the final visit, her IRD decreased to one centimeter, and she reported she had no episodes for two weeks, enabling her to enjoy her first family holiday with her son. Her average pain severity decreased from a 10 in the ED to total resolution.

A 26-year-old G1P001 female six-weeks postpartum presented for subacute diastasis recti-associated abdominal pain refractory to conventional treatment. Considering the lack of available treatments for abdominal pain in diastasis recti, OMT should be viewed as a viable treatment option for this condition.

Acknowledgments/Disclosures

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Atypical Guillain-Barré Syndrome Presenting Initially as a Case of Bell's Palsy

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Objectives

1. Highlighting the importance of considering and testing for an alternate diagnosis when a clinical presentation does not fit the working diagnosis.
2. Atypical Guillain-Barre Syndrome

Introduction

Guillain-Barré syndrome (GBS) is a manifestation of neuronal deficits usually occurring subsequent to an episode of an acute infection. An error in the host's immunological response to a pathogen allows for antibodies against self to be created. GBS is a clinical diagnosis, and patients often present with classical symptoms such as muscle weakness, neuropathies, hyporeflexia, and dysethesia's in the limbs[5]. Various subtypes of GBS exist, notably, the most prevalent one is Acute Inflammatory Demyelinating Polyneuropathy (AIDP) which has the classical pattern of ascending paralysis. For this case, Miller-Fischer Syndrome (MFS) variant is important, which presents with a triad of ophthalmoplegia, areflexia, ataxia(1,2,5).

Case Description

This is a case of a woman in her 30s who arrived at the Emergency Department with a one-day history of left-sided ptosis and facial droop after flu-like symptoms consisting of cough, congestion, and body aches. A head CT was negative, and she was diagnosed with Bell's Palsy and discharged with prednisone and valacyclovir. However, over the next few days her condition deteriorated with new onset dysphagia, dysarthria, and bilateral numbness in her extremities. She returned to the Emergency Department reporting worsening muscle weakness and gait instability.

On examination, she was alert and oriented, with good comprehension but significant dysarthria. She reported diplopia, left-sided facial droop, left-sided tongue deviation, and unable to move her tongue past midline. Sensory testing was intact throughout, but motor examination revealed significant weakness in her proximal extremities. Reflexes were also absent in all four extremities.

For further investigation a lumbar puncture was performed. The CSF findings of albuminocytologic dissociation along with the lack of infectious causes pointed towards GBS.The descending paralysis beginning with proximal weakness in bilateral upper and lower extremity, along with diplopia, dysarthria, absent reflexes, and lack of sensory deficits guided us to a diagnosis of atypical GBS.

This patient was started on IVIG 4 mg/kg, and the progression of the disease slowed indicating success of the treatment. Over the next few days, proximal muscle strength slowly improved.

Discussion

Guillain-Barré Syndrome has a predisposition to follow a pattern of symptoms such as ascending paralysis[4]. However, GBS can have various subtypes. Miller-Fischer Syndrome is one subtype that presents with bilateral ophthalmoplegia, ataxia, and areflexia([1],[2]). However, motor symptoms such as

proximal muscle weakness are typically absent. AIDP presents with an ascending pattern of motor weakness that may include proximal muscles[2]. In this case, this patient does not fit either criteria but rather a mix of both.

Outcomes/Conclusions

The patient's facial neurological manifestations are consistent with MFS, but the patient's motor symptoms are consistent with AIDP. This proves that the diagnosis of GBS should be considered to exist on a spectrum. Symptoms often do not align with discrete categories, but rather may include symptoms and meet criteria of the varying subtypes.

Acknowledgments/Disclosures

None

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From Foot to Shoulder: Systemic Impacts of Diabetic-Associated Sepsis

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Objectives

The purpose of this presentation is to examine a rare clinical presentation of septic arthritis of the shoulder as a secondary complication of sepsis that originated from a diabetic foot infection. The importance of early management and awareness of sepsis complications in diabetic patients will be discussed.

Introduction

Diabetic foot infections (DFIs) are a common complication of diabetes mellitus often caused by poor circulation and impaired immune function. Patients with diabetes are at a significantly higher risk of infection related hospitalization, foot infections, and recurrent foot ulcers.[1] In addition, diabetic patients have a 2 to 6 times higher risk of sepsis compared to non-diabetic patients and higher morbidity and mortality rates.[2] A CDC study found that 17% of patients who had sepsis between 1979 and 2003 had diabetes.[3] Sepsis accounts for 20% of all global deaths in 2017 and disproportionately impacts vulnerable populations such as immunocompromised patients with diabetes mellitus.[4] Septic shoulder is an uncommon complication of sepsis, and a study reported that only 13% of patients with septic shoulder had another source of infection.[5] To have all three conditions manifesting in one patient is uncommon. This case highlights the importance of multifocal infections that may present with diabetic patients and a multidisciplinary approach to optimize patient outcomes.

Case Description

A 62-year-old patient with a history of diabetes mellitus presented to the emergency department with left foot pain. Upon examination, the patient was observed to be hypotensive and tachycardic with multiple lesions, swelling, erythema, and purulent discharge on the left foot. The patient was started on broad spectrum antibiotics and fluids for a DFI and sepsis. The patient continued to complain of left shoulder pain which was warm to the touch and painful with range of motion. Arthrocentesis of the shoulder was performed and revealed a septic joint and the patient was subsequently sent to the OR for joint washout and debridement of the left foot. The patient recovered and was discharged after one week.

Discussion

Patients with diabetes are often predisposed to infection due to poor circulation and impaired immune function. Peripheral neuropathy, another complication of diabetes mellitus, may impair a patient's ability to feel pain, discomfort, and respond to infection until the infection grows or progresses to sepsis. DFIs are a common infection with a chance to progress to systemic sepsis, however, secondary septic shoulder infections due to hematogenous seeding is often rare. This case highlights the need for patients to be evaluated for possible complications of sepsis in their differential diagnosis.

Outcomes/Conclusions

Due to two separate sources of infection, the patient had to undergo debridement of the foot by a podiatrist and a shoulder washout by an orthopedist. Two separate treatments were required to treat the different sources of infection and resolve the sepsis. Early management and recognition of patients with DFIs, systemic sepsis, and septic arthritis is crucial to prevent irreversible morbidity and mortality.

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Linear Immunoglobulin A (IgA) Bullous Dermatosis of Childhood Mimicking Bullous Tinea Infection

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Objectives

The main objectives of this case study are to describe an atypical presentation of Chronic Bullous Dermatosis of Childhood (CBDC) and emphasize the importance of considering CBDC in the differential diagnosis of pediatric patients presenting with an abrupt-onset, pruritic rash. The case also underscores the importance of early histopathological evaluation and direct immunofluorescence (DIF) in confirming CBDC.

Introduction

Linear IgA Bullous Dermatosis (LABD) is a rare autoimmune blistering disorder characterized by linear immunoglobulin A (IgA) deposition along the basement membrane zone (BMZ), detected on DIF[1]. The childhood variant, CBDC, primarily affects children aged 6 months to 10 years, with the peak onset around 4.5 years[2]. CBDC manifests as intensely pruritic annular clusters of tense vesicles and bullae, often forming a "string-of-pearls" pattern as new blisters form at the periphery of healing lesions. Commonly involved areas include the lower abdomen, perineum, and genitalia. CBDC is frequently idiopathic, but can also be triggered by infections, medications, vaccinations, UV radiation, or malignancy[3-5]. It is often misdiagnosed as bullous impetigo, particularly when it presents atypically. The first-line treatment is dapsone, with sulphapyridine or colchicine used alternatively when dapsone is contraindicated. Supportive care includes antihistamines for pruritis and proper wound management. Corticosteroids are used in severe cases but are generally avoided for long-term treatment. With treatment, most cases resolve by puberty[6].

Case Description

A previously healthy 13-year-old boy presented for 2 weeks of severely pruritic, red annular plaques with peripheral vesicles affecting the chest, abdomen, back, and periorbital and cheek regions. He had no significant medical history, without recent medication exposure, infections, or vaccinations. Initial treatment with oral terbinafine and oral doxycycline for bullous tinea and bullous impetigo, respectively, was ineffective, with no improvement after 1 week.

Discussion

A punch biopsy taken from perilesional skin on the back revealed subepidermal blisters and a neutrophilic infiltrate, suggesting either dermatitis herpetiformis (DH) or CBDC. A second punch biopsy was obtained for DIF. Blood tests including CBC, G6PD activity, and tTG IgA were all normal. While awaiting DIF results, the patient was started on a prednisone taper (20 mg daily, reducing to 10 mg daily), but there was no improvement. DIF results confirmed linear IgA deposition along the BMZ, diagnosing CBDC. Dapsone was initiated at 50 mg daily, with weekly bloodwork for monitoring. Due to active skin lesions and the potential for infection, osteopathic manipulative medicine was deferred.

Outcomes/Conclusions

The patient showed clinical improvement within 2 weeks of starting dapsone, with near complete resolution of both pruritus and lesions by 4 weeks. The case remains idiopathic. This case reinforces the point that CBDC can present atypically, both in terms of age and lesion distribution. Thus, clinicians should maintain a high index of suspicion for CBDC when evaluating abrupt pruritic rashes. Early recognition, along with histopathology and DIF, is essential for timely diagnosis and initiation of treatment, which can facilitate rapid resolution of symptoms and excellent long-term outcomes.

Acknowledgments/Disclosures

N/A

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Diagnosing Spiradenoma: The Importance of Maintaining a Broad Differential to Prevent Misdiagnosis

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Objectives

Spiradenomas are an extremely rare neoplasm that are often located in head and neck regions with less common locations being extremities and trunk. Due to varied presentations which can be both asymptomatic and symptomatic, it can be misclassified for more conditions such as angioma, angioleiomyoma, glomus tumor and lipomas.[1] Although spiradenoma can be classified as benign in the beginning of their growth, they have a quick rate of metastasis into malignancy and should be treated surgically to prevent transformation.

Introduction

A misdiagnosis of a skin mass can be detrimental to the health of an individual and without proper treatment, can lead to unfortunate outcomes. Spiradenomas are challenging to distinguish from the more common, benign subcutaneous tumors such as lipomas. Lipomas are frequent and typically not treated as they do not pose a threat to the individual.[2] Although lipomas are most common, maintaining a broad differential is important to not overlook more serious conditions that need more thorough treatment.

Case Description

This case report focuses on 52-year-old Caucasian female single spiradenoma nodule on right arm. Patient did not present with the main clinical symptom of pain. They mentioned it was a new growth that had been on their arm for awhile but stated that it had not grown since they discovered it. Patient presented asymptomatic and an excision biopsy for a definitive diagnosis was determined to be the best prognostic factor

Discussion

An appropriate workup and differential diagnosis are important since skin lesions can be a range of etilogies and severity. Some differentials to consider would be angiolipoma, neuroma, leiomyoma and glomus tumor. To confirm a diagnosis of spiradenoma, a histopathology report is necessary. Utilizing an osteopathic approach, it is important to emphasize preventative care and addressing potential issues before they escalate into more severe conditions. Considering the patient as a whole person in a holistic manner can help promote overall wellness and prevent malignancy by addressing valid concerns with broad differentials and proper treatment.[3]

Outcomes/Conclusions

Overlapping features of dermatologic neoplasms can complicate definitive diagnosis hence the importance of maintaining a broad differential and performing a complete clinical examination, dermoscopy and utilizing immunohistochemical methods to prevent misdiagnosis. It is typical to take conservative approach for lipomas but for spiradenomas it is recommended to perform conservative surgical excision due to their quick malignant transformation with main distinguishing factors being pathological. When a patient presents with symptoms typical of benign neoplasms, it is important to consider all differentials and to pursue definitive diagnostic techniques to rule out malignancy.

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Danielle Barnett-Trapp, D.O., John Ashurst D.O.

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PERFORMANCE AND POPULATION HEALTH IMPROVEMENT POSTER ABSTRACTS

Outcomes of a Health Systems Advocacy, Leadership & Management (HALM) Curriculum in Family Medicine Residency Program

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Objectives

The number of physicians directing hospitals has been down trending, with fewer than 4% of U.S. hospitals headed by physicians. Leadership education is necessary for cultivating capable physician leaders.

Introduction

Healthcare Administration, Leadership, and Management (HALM) offers a broad area of expertise that is key to healthcare delivery and health services research. Recently the Accreditation Council for Graduate Medical Education (ACGME) established a Review Committee (RC) specific to HALM fellowships. Some of the core of HALM competencies are common program requirements already. Although most residency programs offer a curriculum in health systems to fulfill these requirements, there is dearth of data on the outcomes of these curricula. This study aims to perform a retrospective review of Kirkpatrick Level 2, 3, and 4 outcomes of the 5 years of implementation of the HALM curriculum. Osteopathy graduates should strongly consider the implementation of HALM to gain skills necessary to succeed in higher professional careers.

Methods

We implemented a HALM curriculum in a family medicine residency program featuring competencies in patient safety, healthcare quality, care management, and systems of care. This study reports the comparison between pre-HALM and post-HALM groups by measuring the achievement of the Kirkpatrick Level 2, 3, and 4 outcomes. The levels were ranked as demonstration of interdisciplinary leadership within the program (Kirkpatrick Level-2), demonstrating a significant leadership role outside of the program (Kirkpatrick Level-3), or obtaining a physician leadership role or significant entrepreneurship (Kirkpatrick Level-4). The outcomes measured included meaningful resident engagement and involvement in a large, complex, integrated healthcare delivery system. A total of 51 residents, 26 in pre and 25 in post group, were included in this study. The demographics of each group included gender, race, and type

of medical school (Osteopathic COCA accredited, LCME accredited, or international). Gender was categorized into female vs male, and race was measured among White, Asian, Black, and Latinx participants.

Results

The pre and post-implementation groups were comparable with no statistically significant difference in their composition (p-value >0.05) with regard to gender and race. The number of residents from Osteopathic schools was significantly higher in the pre-implementation group than in the post (p-value <0.001).The results showed increased overall Kirkpatrick Level outcomes in the post-HALM group, meaning more leadership roles were obtained by the physicians who participated in the HALM curriculum. The average number of demonstrated Kirkpatrick level 4 behaviors increased significantly from pre- to post-implementation of the HALM curriculum. This difference was statistically significant with a p-value <0.05. Overall, the implementation of the HALM curriculum correlated with an increase in physician leadership.

Discussion/Conclusions

The HALM curriculum effectively achieved its objectives of enhancing resident competency in Health Systems science related to healthcare advocacy, leadership, and management. This innovative curriculum can serve as a model for other residency and fellowship programs seeking to fulfill accreditation requirements and equip future physicians with essential skills. This HALM curriculum outcomes holds promise for enhancing leadership in Health Systems.

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Fostering Wellness: Exploring Food Insecurity and Healthy Food Accessibility in the Adelante Healthcare Patient Population

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Objectives

1. Assess the prevalence of food insecurity within the Adelante Healthcare patient population.
2. Explore possible relations between food insecurity, patient income, family dependents, and coexisting medical conditions.
3. Identify resources and interventions that Adelante Healthcare can offer to address food insecurity among its patient population.

Introduction

Food insecurity (FI), characterized by limited access to nutritionally adequate foods, disproportionately impacts low-income individuals and exacerbates health disparities. Chronic conditions such as diabetes, hypertension, and hyperlipidemia are closely linked to FI. This study investigates the prevalence of FI among Adelante Healthcare patients and explores its correlations with income, family size, and medical comorbidities. The findings aim to guide interventions, including educational programs, food basket distribution, and farmer's markets.

Methods

A bilingual survey, incorporating both quantitative and qualitative elements, was administered in English and Spanish to patients aged ≥18 years. The Hunger Vital Sign™ tool was employed to evaluate the FI risk, along with questions addressing attitudes toward FI, coexisting medical conditions, and competence in procuring and preparing healthy foods.

Results

Among 274 participants (103 Spanish-speaking, 171 English-speaking), 35% were identified as food insecure. FI was significantly correlated with the number of household dependents and conditions such as diabetes, hypertension, and hyperlipidemia ($p<0.05$). The majority of participants with a medical condition (84%) reported annual incomes < $50,000. Additionally, patients expressed interest in health-focused initiatives, including food baskets and farmer's markets.

Discussion/Conclusions

Findings underscore the strong association between food insecurity (FI), chronic diseases, and low income. Despite some challenges with survey completeness, the results reveal a clear demand for health-focused initiatives. The robust patient interest in programs such as farmer's markets and nutrition education highlights the potential for impactful community interventions. Expanding partnerships with organizations like St. Mary's Food Bank and implementing targeted programs could effectively address FI while improving health outcomes. This study highlights the urgent need for targeted interventions at Adelante Healthcare to combat FI and improve patient health outcomes. By leveraging survey insights, future efforts can align community resources, such as farmer's markets and food banks with patient needs to foster a healthier and more equitable population.

Acknowledgments/Disclosures

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An Evaluation of the Nutrition and Health Awareness (NHA) Program on Health Knowledge, Health Literacy and Activity Levels

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Objectives

The objective of this project is to evaluate the effectiveness of an in-person health curriculum in facilitating changes to students' health knowledge related to physical activity level, nutrition, and chronic disease prevention and to measure the retention of the information one year after the program is conducted. The curriculum will additionally gauge shifts in health attitudes before and after the administration of the program.

Introduction

In Arizona, the prevalence of children who are overweight or obese is approximately 28%, ranking 25th in the nation. Additionally, the prevalence of obesity increases as family income decreases. Current American Academy of Pediatrics Clinical Practice Guidelines emphasize the importance of improving policies for nutrition programs and food insecurity to address childhood obesity in hopes of decreasing the risk of chronic disease. Our Nutrition & Health Awareness (NHA) curriculum addresses these concerns in an eight-week program at a Title I elementary school, emphasizing health practices and lifestyle modifications that can reduce the risk of chronic diseases such as heart disease and diabetes. The curriculum also aims to improve the accessibility of health education and improve self-efficacy and attitudes toward health behaviors. ATSU-SOMA students have implemented this program annually since 2020 and have found statistically significant results with each cohort. However, this is the first time that long-term retention is being measured with the same class one year later to assess the pedagogical approach and the curriculum material.

Methods

Investigators developed and administered five lessons in-person over the course of five weeks to 100 eligible fourth-grade students at Emerson Elementary School in Mesa, Arizona on topics such as physical activity, nutrition, heart disease, and diabetes. One week prior to the start of lessons, participants completed a questionnaire consisting of 15 conceptual questions and 12 attitude questions. Participants completed the same questionnaire one week, four weeks, and one year after the completion of the curriculum to assess for retention.

Results

Results are obtained by comparing the number of correct responses per question in the pre-questionnaire relative to the two post- and retention-questionnaires. There was a statistically significant increase in health knowledge between the pre- and the post-survey, as well as a positive difference in their attitude towards health behaviors. We expect a similar result to the post-survey one year later in the 5th grade class.

Discussion/Conclusions

In conclusion, NHA was able to foster favorable perspectives on health and well-being within an engaging and hands-on setting. This initiative addresses the gap in interventions that offer essential health information not typically covered in schools. Challenges encompass issues related to technological hurdles, maintaining consistent data, and upholding cultural competence. NHA holds the potential to advance children's health and well-being while also serving as a platform to collect crucial data for the development of similar programs. As future osteopathic physicians, this study emphasizes the importance of patient education and the role that social determinants of health plays in preventing chronic diseases starting in the pediatric population.

Acknowledgments/Disclosures

We'd like to acknowledge the ATSU-SOMA student volunteers who helped teach the curriculum, the 4th grade students and teachers at Emerson Elementary, and the statistician team at ATSU-SOMA.

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Improving Screening for Social Determinants of Health and Subsequent Resource Referral in the Midwestern University Glendale Campus Multispecialty Clinic

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Objectives

Following transition of electronic medical record (EMR) platforms to Epic in October 2023, patient response rate to Social Determinants of Health (SDoH) screening questions has remained lower than expected. A targeted intervention geared towards the Family Medicine (FM) and Osteopathic Manipulative Medicine (OMM) patients will be implemented, aiming to increase the patient response rate to SDoH screening questions through a patient educational handout describing what the SDoH are; following this, a resource referral handout will be created that can be provided to the FM and OMM patients stratified as "at-risk" to help them address the most common SDoH factors impacting their health.[1]

Introduction

According to the World Health Organization, the SDoH are "the nonmedical factors that influence health outcomes." They are categorized into five distinct domains, including economic stability, education access and quality, healthcare access and quality, neighborhood and built environment, and social and community context.[2,3]

On October 18, 2023, the Midwestern University Glendale Multispecialty Clinic (MSC) officially switched EMR platforms from Allscripts to Epic. Amid the transition, we noted that Epic has the functionality to track SDoH data through active surveillance screening questions listed in a patient's pre-visit paperwork in the MyChart mobile application, which integrates seamlessly with the patient's EMR data. This was incorporated into our buildout so that our providers could address these factors affecting the health of our patients. However, over 1-year from the go-live of the Epic platform, the response rate to these screening questions remains low. Our institution helps critically support our surrounding community, and given this, the MSC is not as effective as it potentially could be in promoting optimal health in our patient population. Given the inadequate SDoH tracking, there is insufficient resource referral to help address the SDoH concerns affecting the MSC patient population.

As Osteopathic physicians, failure to address the SDoH, which falls under the Behavioral-Biopsychosocial Model of Osteopathic Care, leads to suboptimal care for our patients from the lens of our profession.[4]

Methods

A patient educational handout describing what the SDoH are will be created, aiming to increase the patient response rate to SDoH screening questions; following this, a resource referral handout will be created that can be provided to patients to address SDoH they are impacted by. This study will be limited to the FM and OMM patient populations.

Results

This is a study in progress, and results are not yet available.

Discussion/Conclusions

The primary outcome will examine the change in response rate following the addition of the educational handout regarding the SDoH to the pre-visit paperwork. The secondary outcomes will examine the SDoH

most impacting our patients and provider reporting of the frequency of providing at-risk patients with the resource referral handout.

Implementing this project will improve the systems and processes within the MSC, thereby improving functionality and resource utilization. It will also improve the population health of the MSC patient population.

Acknowledgments/Disclosures

The authors formally disclose their affiliation with Midwestern University Glendale MSC as faculty and junior faculty. This study did not receive any funding to disclose. Student Doctor Blankenbaker discloses that this project is being implemented and used for a dual purpose to satisfy degree requirements for his Master of Public Health (MPH) degree Culminating Project requirement and his Applied Master Degree in Osteopathic Education (AMOE) Quality Improvement Project requirement. A tremendous amount of thanks is given to Drs. Sangkam, Scott, and Ashurst for their constant mentorship and feedback as this project was designed and implemented.

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Expanding Point of Care Ultrasound Education and Uncovering the Diagnostic Benefits

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Objectives

It was felt Canyon Vista Medical Center Internal Medicine Residents were not utilizing ultrasound as often as they could be. This quality improvement project sought to determine if we could increase our residents' confidence in their abilities to perform bedside ultrasound, and increase the likelihood they

would use ultrasound to make diagnoses. The project also assessed the most common reasons residents with additional training have used ultrasound to evaluate floor patients.

Learning objective: Understand how CVMC residents underwent additional POCUS training hours to improve their confidence in using ultrasound to treat patients.

Introduction

Most residents do not get formal ultrasound training in medical school. In a study of military IM residents, less than 10% had formal ultrasound training before residency (Mellor). Studies have shown improvement in surgical resident competency with ultrasound after completing a POCUS course designed for surgeons (Kotagal). Further, Midwestern University AZCOM incorporates ultrasound training into the education curriculum; surveys of graduated students found that most are confident in performing POCUS exams, which has translated to benefit in practice as residents (Le et al).

We sought to implement more opportunities for residents to acquire POCUS knowledge and develop the associated motor skills. Between 8/2024-1/2025, POCUS workshops totaled about 15 hours of ultrasonography training..

The importance of this project is clear, as CVMC residents are using their sonography skills to obtain data they may not have otherwise, including volume status and estimation of ejection fraction.

Methods

Resident ultrasound practice sessions were established, including monthly resident-led presentations of POCUS topics followed immediately by hands-on practice. Every two months are attending-led workshops spanning 3 hours of hands-on practice in a condensed format with an emergency medicine physician.

Surveys were distributed to IM residents at CVMC 6 months after implementing practice sessions. Residents estimated, on a scale of 1-5, their confidence levels obtaining ultrasound images before and about 6 months after implementation of increased ultrasound training hours. A T-test was used to compare the difference in mean confidence obtaining echocardiographic and FAST exam views before and after integrated ultrasound training.

Results

Surveys were collected from 13 residents. On a scale of 1-5, the estimated mean confidence level of residents before 7/1/2024 in obtaining echocardiographic views was 2.0 [CI 95%, 1.574-2.426]. Residents estimated their level of confidence obtaining these views after 1/1/2025 at a mean of 3.769 [CI 95%, 1.335-4.203]. Our key finding was a statistically significant difference in mean confidence after implementation of regimented ultrasound practice ($P < 0.0001$). The most common reason for use of ultrasonography on patients by residents during this project was assessment of volume status.

Discussion/Conclusions

Our analysis showed a statistically significant increase in resident confidence obtaining echocardiographic and FAST exam views after 6 months of ultrasound workshops and practice sessions. This has translated to

more rapid diagnostic information obtained on patients in our hospital. As a direct result of this project, we plan to continue structured ultrasound learning hours, as it has directly led to improved diagnostic ability and patient care.

Acknowledgments/Disclosures

Residents who participated in the survey.

No further acknowledgements.

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Improving Mental Health Service Access Among Patients with HIV and Depression at an Underserved Urban Centered Health Clinic

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Objectives

The objective of this study is to assess the access to mental health services of patients living with HIV at the Center for Comprehensive Health Practice (CCHP) in East Harlem, New York and to identify barriers to such mental health services. The study aims to increase referrals and linkage to care such as psychiatric services and/or mental health counseling for patients by 25%.

Introduction

Human Immunodeficiency Virus (HIV) remains a major public health issue globally and across the United States. HIV has claimed approximately 40.1 million lives worldwide, with ongoing transmission in all countries across the globe.[1] In New York City alone, 103,900 New Yorkers were living with diagnosed HIV at the end of 2021.[2] Despite the great progress that has been made in the prevention and treatment

of HIV, there is still work to be done to improve the treatment of HIV and its related comorbidities. Depression is among the most important psychiatric comorbidity of HIV as it is the most common neuropsychiatric complication in HIV-infected patients and may occur at all phases of infection.[3] The complex relationship between depression and HIV warrants further exploration and presents a challenge to patient care and clinical outcomes in these populations. Physicians must be able to address the psychiatric and medical care of their patients effectively, given the psychosocial stressors associated with living with HIV.[4]

Given the complex nature of depression and HIV treatment, it is important that mental health needs are addressed for individuals living with HIV. Depression represents an important issue that can impact clinical care at various levels. Access to mental health services must be improved and barriers to care must be addressed in order to improve the overall health outcomes of this population.

Methods

The project is a quality improvement initiative using retrospective chart review via eClinicalWorks electronic medical records of patients from the CCHP, an underserved urban centered health clinic, who are over the age of 18 and living with HIV. Retrospective chart review was completed to determine if eligible patients had a completed depression screening (either Patient Health Questionnaire, PHQ-2 or PHQ-9) from February 1, 2024 to February 1, 2025. Patients who did not have a completed depression screening were flagged and reasons why they did not have a completed screening were identified (such as already in treatment, declined screening, or other reasons). For patients with a positive depression screen, status of referrals and linkage to care were ascertained to determine if patients were referred to psychiatric services and/or mental health counseling.

Results

Results of the study are in progress.

Discussion/Conclusions

The main outcome of the project will allow for the detection of barriers to mental health services faced by patients living with HIV, potentially highlighting disparities among this population. Identifying the complexities of care of patients living with HIV will enable physicians to better address the mental health care needs of this population and improve patient outcomes.

Acknowledgments/Disclosures

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Impacts of Medical Clinic or Educational Event Participation on Medical Student Perception of Underserved Populations

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Objectives

To determine the impact of participation in a student run free medical clinic or education event on HOME course medical students' attitude towards and knowledge of caring for underserved populations.

Introduction

There is a strong need for medical schools to incorporate social accountability into the curriculum. With the osteopathic profession's long history of community involvement and primary care, osteopathic medical schools are uniquely positioned to train physicians dedicated to fulfilling society's healthcare needs.[1] The Arizona College of Osteopathic Medicine (AZCOM) has risen to this call through student involvement in Health Outreach through Medicine and Education (HOME). HOME is a student-run organization that provides free healthcare and health education events for underserved clients residing in Phoenix area shelters. All second-year AZCOM students take the HOME course, in which they are required to either participate in a student-run free medical clinic or develop and lead an educational presentation. A study on a similar student-run free clinic and course at the University of California San Diego School of Medicine found that medical students enrolled in this program reported increased understanding, skills, attitude and interest in working with underserved populations following their participation.[2] This project intends to determine if a similar effect is observed in AZCOM students involved in HOME course through their participation in a clinic or education event.

Methods

The data for this project consists of pre/post HOME course survey responses by second year AZCOM students from 2020-2024. Questions 2 and 5 were selected to assess participants' attitude toward and knowledge of caring for underserved populations, respectively. The multiple-choice survey responses were extracted from Canvas and de-identified by the course coordinator, converted to a Likert scale by the author, and a statistical analysis was run using the SAS program.

Results

306 participants completed an education event and 332 attended a clinic event (166 in-person, 166 virtually). The mean difference in pre and post-event response significantly increased for Question 2: 0.4967 (95% CI 0.4007, 0.5928, p-value <0.0001) in the Education group, 0.5602 (95% CI 0.4280, 0.6925, p-value <0.0001) in the Clinic group, and 0.5060 (95% CI 0.3745, 0.6375, p-value <0.0001) in the Virtual Clinic group. A significantly positive response to Question 2 evaluating attitude was found in all three groups with t-test p-values of $2.00x10^{-21}$, $1.23x10^{-1}$, and $1.068x10^{-12}$ for the Education, Clinic and Virtual Clinic groups. For Question 5 evaluating knowledge, there was no significant mean difference nor difference in pre and post survey responses for all three groups.

Discussion/Conclusions

This study found that involvement in the HOME course and a clinic or education event improved student attitude towards underserved populations, but did not significantly increase student knowledge in caring for these patients. The findings support continuation of the HOME program and offer insight to how the experience can be better tailored to improve student skills in this area.

Acknowledgments/Disclosures

Data collected in collaboration with Health Outreach Through Medicine and Education (HOME), Arizona College of Osteopathic Medicine, Midwestern University, Glendale AZ.

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Describing the gap in patient-provider knowledge regarding congenital cytomegalovirus (cCMV) transmission

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Objectives

Our study aimed to evaluate health risk knowledge of congenital cytomegalovirus (cCMV) among families with affected children and the healthcare providers who serve them, with a specific focus on virus transmission. We hypothesized significant differences in baseline understanding between these groups. Our first objective was to quantify this perception gap, while the second objective was to

leverage our findings to identify key areas for targeted educational interventions. The anticipated outcome of this study is to inform and drive systemic improvements in cCMV screening, treatment, and family support services.

Introduction

Cytomegalovirus (CMV) is a common virus that infects people of all ages. Typically infections have no clinical manifestations in otherwise healthy people. However, CMV cause serious, permanent health conditions for babies infected during pregnancy (congenital CMV), including Deafness and hearing loss, developmental and motor disabilities[1]. Congenital CMV is the most common congenital infection in the United States, and yet studies have demonstrated low awareness and knowledge of the virus among the public and healthcare providers[2]. Many advocates for cCMV awareness are family caregivers, in partnership with provider partners. Our study measures CMV knowledge in these populations.

Methods

We recruited families affected by cCMV and health care providers in Arizona via e-mails and social media posts in Fall 2020-2021. Participants completed an online, anonymous 24-question survey using Survey Monkey. We compared responses between groups and previously published CMV awareness data using binomial tests of difference of proportions.

Results

Of identified behavioral modes of CMV transmission, 69% of healthcare providers correctly identified that sharing eating utensils can cause transmission of the virus but only 38% of mothers answered the same question correctly. 69% of healthcare providers also correctly identified that sharing food or drink can transmit the virus whereas only 34% of mothers surveyed answered correctly. 62% and 64% of healthcare providers correctly identified handling children's toys as a method of CMV transmission. Only 40% of mothers correctly answered that the virus can be transmitted via kissing whereas 76% of providers answered the same question correctly.

Discussion/Conclusions

The findings of this study highlight both lower demonstrated health risk knowledge than appropriate to prevent CMV transmission, as well as a knowledge gap between physicians and patients regarding CMV health risk knowledge. This disparity is concerning, as effective healthcare delivery relies heavily on shared decision-making and informed patient participation.

Our study underscores the need for targeted educational interventions to bridge this gap. Addressing these challenges will require a multi-faceted approach, including the development of standardized educational materials, integration of patient education into routine care, and leveraging digital platforms to disseminate information.

Acknowledgments/Disclosures

N/A

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RESEARCH POSTER ABSTRACTS

Anxiety and Pain in IUD Placement: Pre-, Intra-, and Post-Procedure Interventions to Improve the Patient Experience

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Objectives

- Identify areas within the IUD insertion that produce the most pain for women.
- Create a comprehensive list of interventions actively being researched.
- Propose a multifaceted procedural revision to IUD insertion to reduce pain and improve the patient experience.
- Integrating pharmacological, methodological, and socially-aware changes are required in approaching patient centered reforms that address pain and anxiety during IUD insertion.

Introduction

Removing barriers to contraception involves improving access and willingness to undergo the procedure. Current guidelines and training regarding pain management in intrauterine device (IUD) placement is vague, leaving the possibility the patient's pain goes inadequately treated. In order to address patient anxiety and improve procedural outcomes, patient centered reforms require integration of pharmacologic, methodological, and socially-aware changes throughout all stages of care.

Methods

A narrative review of Medline Complete was conducted using keywords intrauterine device, IUD insertion, pain management, and analgesics. Results were filtered out by articles prior to 2019, duplicates, and retracted articles.

Results

The search produced 27 articles. Three major categories were identified: pre-procedure ("what is my care going to look like"), intra-procedure ("what is the physician doing"), and post-procedure ("what are my outcomes going to be"). Pre-procedure changes included comprehensive evaluation for anxiety, self administration of vaginal dinoprostone, acupuncture, and anti-inflammatory agents. Intra-procedure changes included paracervical blocks, alternative instruments, distraction methods, and local analgesia. Post-procedure changes used ultrasound guidance for reassurance. Pain ratings were highest during sounding, tenaculum placement, insertion of the device, and in adolescent and nulliparous women.

Discussion/Conclusions

Interventions prior to the procedure reduced anxiety, intra-procedure pain, and provided women autonomy. Pre-procedure anxiety was directly correlated with intra-procedure pain. Pharmacologic management is effective in reducing pain scores intra- and post-procedurally, while maintaining procedure length. Alternative tools (e.g. Allis clamp, Carevix) are equally efficacious without causing trauma and distraction methods (e.g. virtual reality, TENS, verbal analgesia) effectively attenuated anxiety. Ultrasound guided insertion confirms proper placement, allowing women confidence. Methods discussed have broader application to optimize patient satisfaction in other gynecologic procedures. Specific research on multifaceted procedural revision is needed to evaluate additive effects of pre-, intra-, and post-procedure modifications in improving patient outcomes.

Acknowledgments/Disclosures

Benjamin Ihms

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Bridging the Knowledge Gap in CYP2C19 Polymorphisms: Optimizing Omeprazole and Escitalopram Therapy for Personalized Management of Depressive Symptoms

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Objectives

Investigate how CYP2C19 polymorphisms influence the pharmacokinetics and therapeutic response of escitalopram in patients with depressive symptoms. Examine the impact of CYP2C19 genetic variations on escitalopram efficacy and safety when co-administered with omeprazole for GERD. Assess the benefits of pharmacogenomic testing in optimizing treatment for patients with depressive symptoms on escitalopram and omeprazole.

Introduction

Selective serotonin reuptake inhibitors (SSRIs) like escitalopram, with 172,893 prescriptions from 2018 to 2022, are first-line treatments for depressive and anxiety disorders. However, up to 50% of patients require adjustments due to variable responses and side effects. Escitalopram is metabolized by the CYP2C19 enzyme, which has over 30 gene variants, including loss- and gain-of-function alleles, leading to differences in metabolism, plasma concentrations, and therapeutic outcomes.

CYP2C19 also metabolizes omeprazole, a commonly prescribed proton pump inhibitor (PPI). In 2019, 19 million U.S. patients used PPIs, with 37.8% aged 65+ prescribed them and 25% using them long-term. The co-prescription of PPIs and escitalopram raises concerns about drug-drug interactions, affecting efficacy and safety.

Pharmacogenomic testing identifies CYP2C19 phenotypes, enabling precise dosing and reducing adverse effects. This personalized approach minimizes trial-and-error in managing depressive and anxiety symptoms, improving treatment adherence and outcomes.

Methods

An extensive literature search was conducted using PubMed and Google Scholar with keywords including “CYP2C19 polymorphisms,” “escitalopram pharmacokinetics,” “pharmacogenomics,” and “omeprazole interactions.” Peer-reviewed English articles (2015–2024) focusing on the pharmacokinetics, therapeutic efficacy, safety profiles of escitalopram, and the role of CYP2C19 genetic variations in drug interactions, particularly with omeprazole, were prioritized. Findings were synthesized following AMA citation standards.

Results

An evaluation of retrospective cohort studies, observational studies, cross-sectional studies, and literature reviews demonstrated that the frequency and severity of escitalopram side effects are influenced by CYP2C19 phenotypes. Poor metabolizers (PMs), more prevalent in the East Asian population, exhibited elevated serum concentrations of escitalopram, leading to increased adverse effects, such as QTc prolongation, particularly in geriatric and hemodialysis patients who showed age-related decline in drug clearance. Normal metabolizers (NMs) maintained therapeutic drug levels with

fewer side effects. Co-administration of omeprazole, a competitive CYP2C19 inhibitor, increased escitalopram serum concentrations by up to 90%, resulting in a 4.5-fold higher risk of sudden cardiac death (SCD). While PPIs alone did not significantly affect QTc, the combination with escitalopram highlights the critical need for individualized treatment strategies in patients taking escitalopram for depressive symptoms, especially high-risk populations.

Discussion/Conclusions

These findings support the integration of pharmacogenomic testing as a standard of care in psychiatry to enhance therapeutic safety and efficacy, particularly in vulnerable populations with the co-administration of omeprazole. However, this analysis has limitations. Most studies were retrospective, limiting causal inferences, and data on underrepresented populations were sparse. The impact of other genetic and environmental factors on metabolism was not fully explored. Despite these limitations, integrating pharmacogenomic testing into clinical practice can improve safety and adherence. Future research should focus on prospective studies and the cost-effectiveness of genotype-guided therapy to inform routine psychiatric care.

Acknowledgments/Disclosures

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Recent trends in relative survival rates of breast cancer: A SEER analysis from 2010 through 2022

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Objectives

To determine the survival rates of breast cancer based upon age and ethnicity between the different hormone receptor statuses and genetic mutations.

Introduction

Breast cancer is the leading type of cancer in both incidence and mortality among females worldwide, with an estimated 2.2 million new cases and 700,000 deaths in 2020 (Sung et all 2021). The HER2 and HR markers are two important markers utilized in the classification of breast cancer. The HER2 gene is a marker that has been associated with worse prognosis in breast cancer, with an estimated 15-20% of invasive breast cancers being HER2+ (Burstein 2005). The HR (Hormone Receptor) status is another marker which looks at the presence of estrogen and/or progesterone receptors. Up to 70% of patients with breast cancer have HR+ tumors and HR status is a positive prognosis factor and can be a useful target for hormone therapy (Clusan et al 2023). In addition, racial/ethnic groups and age may have an impact on breast cancer survival rates. One study indicated that black women had a death rate 40% than their White counterparts (Giaquinto et al. 2022). Another study indicated that Breast Cancer incidence increases in younger women at menarche and in older women at menopause (Wilkinson & Gathani 2021).

Methods

Information was collected from the National Cancer Institute's Surveillance, Epidemiology, and End Results program (NCI's SEER) from 2010-2022 of females diagnosed with breast cancer. Data abstracted from the database included, relative survival rates, hormone receptor status (HR+ or HR-), genetic mutation (HER2+ or HER2-), age (<50 years, 50-64 years, 65+ years) and ethnicity (black includes

Hispanic and White includes Hispanic). Statistical significance was set as a p-value of less than or equal to 0.05 and data was analyzed using parametric tests following determination of normality.

Results

Overall, patients with HR+/HER2- had a significantly higher rate of relative survival compared to those with HR-/HER2-, HR-/HER2+, and HR+/HER2+ at one, three, and five years ($p<0.001$). This trend was consistent across all age groups, with HR+/HER2- patients showing higher relative survival compared to other subgroups in those under 50 years ($p<0.001$), 50-64 years ($p<0.001$), and 65 years or older ($p<0.001$). Regarding ethnicity, patients classified as white including Hispanic had higher rates of relative survival across all breast cancer subtypes at one ($p<0.001$), three ($p<0.001$), and five years ($p<0.001$) compared to those classified as black by SEER. This pattern was also observed for each age group studied ($p<0.001$), with white including Hispanic patients showing higher survival rates than black including Hispanic patients for all breast cancer subtypes.

Discussion/Conclusions

Over the years studied, patients with HR+/HER2- had the highest rates of relative survival at one, three, and five years for all age groups studied. Those classified by SEER as white including Hispanic had higher rates of relative survival at one, three, and five years for all age groups and breast cancer subtypes as compared to those classified as black including Hispanic.

Acknowledgments/Disclosures

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Speed of Psoriasis Clearance with Biologic Therapies

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Objectives

The aim of this study was to assess the speed of psoriasis clearance using the PASI10025 and PASI10050 metrics. Specifically, the study sought to determine the timeframe within which 25% and 50% of patients achieved 100% clearance, respectively, with various biologic agents.

Introduction

With advancements in psoriasis treatments, many patients now aim for complete clearance of lesions. While the Psoriasis Area and Severity Index (PASI) 100 score is a standardized measure for evaluating clearance, the rate at which clearance is achieved remains poorly defined. Understanding the timeframes for PASI10025 and PASI10050 could provide more specific insights into treatment response speeds.

Methods

A PubMed search was performed for clinical trials investigating IL-17 and IL-23 inhibitors in psoriasis treatment. Studies from FIXTURE, ERASURE, BE RADIANT, UNCOVER-1, UNCOVER-2, AMAGINE-2, AMAGINE-3, VOYAGE-1, UltIMMA-1, and UltIMMA-2 were analyzed. Engauge Digitizer Software was utilized to estimate the weeks at which PASI10025 and PASI10050 were achieved for each drug.

Results

The time to reach PASI10025 varied among biologics. Bimekizumab 320 mg achieved PASI10025 in 5.5 weeks, while other drugs like secukinumab 300 mg and guselkumab 100 mg took up to 13 weeks. For PASI10050, bimekizumab 320 mg reached it in 9.5 weeks, with other drugs such as secukinumab 300 mg taking 16 weeks and risankizumab 150 mg 21 weeks. Several agents, including ustekinumab and certain doses of secukinumab, failed to reach PASI10050.

Discussion/Conclusions

Biologic therapies show considerable variability in the speed of psoriasis clearance. IL-17 inhibitors generally demonstrated faster response times than IL-23 inhibitors. However, IL-23 inhibitors like risankizumab may offer similar or slower results with less frequent dosing and a more favorable adverse event profile. These findings are significant for clinicians and patients considering treatment options based on the speed of response and the clinical profile of the biologics.

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The Effects of A BH4 Supplement (Kuvan®) on Vascular Function & Structure in a Mouse Model of Marfan Syndrome

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Objectives

We aimed to investigate the effects of BH4 supplementation with sapropterin dihydrochloride (Kuvan®) on vascular function and structure in male and female MFS mice. We hypothesized that Kuvan® will reduce aortic root aneurysm growth, wall stiffness, and normalize carotid artery wall thickness, distensibility, and posterior cerebral artery blood flow in MFS mice.

Introduction

Marfan Syndrome (MFS) is an autosomal dominant disorder caused by mutations in the fibrillin-1 (FBN-1) gene, leading to systemic connective tissue abnormalities, with aortic aneurysm and rupture as primary causes of mortality. We have previously shown that MFS aortic aneurysm coincides with pathological changes in other vasculature such as carotid and posterior cerebral arteries in MFS mouse models. It is also well established that MFS aneurysm is associated with endothelial dysfunction, highlighted by a significant reduction in nitric oxide (NO) production and bioavailability. The importance of endothelial dysfunction during the progression of aortic aneurysm has prompted us to explore approaches that could potentially improve endothelial function and NO bioavailability within the aortic wall. Tetrahydrobiopterin (BH4) is a critical cofactor for endothelial nitric oxide synthase (eNOS), enhancing NO production and potentially improving endothelial function and attenuating MFS-associated vascular remodeling.

Methods

At 4 weeks of age, male (n=10-12) and female (n=10-12) control (CTRL) and MFS (*FBN1*$^{+/C1041G}$) mice were subjected to vehicle or Kuvan® (0.1 mg/Kg, 3x/week via gavage) for the duration of the study. At 6 months of age, mice were subjected to ultrasound imaging to measure aortic, left common carotid artery (LCCA), and posterior cerebral artery (PCA) structural and functional properties. Statistical analysis was conducted using two-way ANOVA with Tukey's post-hoc test.

Results

We detected increased aortic root aneurysm and wall stiffness along with increased LCCA wall thickness and stiffness in both male and female MFS mice compared to controls. Both male and female MFS mice showed a marked decrease in PCA blood flow. Our data also demonstrated that Kuvan® significantly improved aortic and LCCA wall elasticity, as indicated by decreased pulse wave velocity, with a significant decrease in carotid wall thickness in both male and female MFS mice. Interestingly, Kuvan® treated male MFS mice experienced greater reductions in aortic root widening and improvements in carotid distensibility compared to female MFS mice. These findings may be in part due to the small sample size of Kuvan®-treated female MFS mice aortic diameter findings (n=5) and LCCA distensibility findings (n=7) compared to Kuvan®-treated male MFS mice (n=13 and n=12, respectively). Kuvan® treatment did not attenuate MFS-associated decrease in PCA peak blood flow velocity.

Discussion/Conclusions

This study demonstrates that BH4 supplementation attenuates MFS-associated vascular remodeling, particularly by reducing aortic root diameter growth and wall stiffness. Considering the role of BH4 in eNOS function, the observed improvements in aortic wall elasticity and carotid wall structure can be attributed to increased eNOS-mediated NO production and warrant further investigation. These findings highlight the potential of BH4 as a therapeutic target for improving vascular function in MFS.

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Aggressive Enforcement of Foreign Substance Use Did Not Increase the Number of Upper Extremity Injuries in Major League Baseball Players

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Objectives

The authors aimed to determine whether the strict enforcement of the foreign substance rule has led to an increase in season-ending upper extremity injuries among MLB pitchers.

Introduction

Pitching is a highly complex movement that places significant biomechanical strain on the body, especially as pitchers strive to throw at higher velocities (1-4). Over time, the repetitive nature of these motions and the constant strain on pitchers increase the risk of injury, particularly in the upper extremities (5, 6, 7). Changes to pitcher biomechanics, whether due to training modifications or external factors such as rule adjustments, can introduce new strain patterns and further elevate the risk of injury (1-4, 5). On June 15, 2021, Major League Baseball (MLB) announced stricter enforcement of foreign substance use by pitchers. Since then, there has been speculation about an increase in season-ending upper extremity injuries among MLB pitchers, though limited published data is available on the subject.

Methods

A retrospective cohort study of all MLB pitchers from 2020 to 2022 performed utilizing publicly available data on player movement to and from the injured list (prosportstransactions.com) was reviewed. Only upper extremity season-ending injuries suffered by players whose primary position was listed as "pitcher" were considered for this study. An injury that resulted in a pitcher's inability to return to play at least 10 games before the end of the regular season was classified as an SEI. All injuries sustained after the 153rd game of the season were excluded from the analysis. Pitcher demographics, the average number of pitches thrown per game, and pitch-specific metrics (baseballsavant.mlb.com) were analyzed for each pitcher on the injured list. R version 4.4.0 (2024-04-24) was utilized for statistical calculations and a p-value of ≤ 0.05 was considered significant. Differences between categorical variables were analyzed with the Chi-Square test and continuous variables were analyzed using a t-test.

Results

In total, 3,105 pitchers who were placed on the injured list were reviewed with 1600 (51.5%) being in the pre-substance ban and 1505 (48.5%) in the post-substance ban groups. Upper extremity SEI occurred in 100 (6.3%) pitchers in the pre-substance ban group and 103 (6.8%) pitchers in the post-substance ban group (p=0.55). There was no difference in height, weight, BMI, pitches thrown per game, pitch release speed, pitch release extension, pitch velocity in the x, y, and z-dimension, pitch acceleration in the x, y, and z-dimension between pitchers in the pre and post groups ($p > 0.05$ all groups).

Discussion/Conclusions

The recent strict enforcement of the foreign sticky substance ban did not result in a significant increase in the incidence of upper extremity SEIs among the MLB pitchers studied. No evidence suggests that the enforcement should be relaxed, and it can continue to be implemented to prevent unfair advantages without raising the risk of upper extremity injury. However, further investigation into specific injury types, locations, and pitching biomechanics is needed to better understand the potential injury mechanisms and their multi-factorial associations.

Acknowledgments/Disclosures

None

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Botulinum toxin A for the Treatment of Androgenetic Alopecia: A Recent Review

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Objectives

1. Analyze how BTA impacts hair growth, hair density, and scalp conditions (e.g., oiliness and pruritus) in AGA patients

2. Evaluate the effectiveness of BTA as a standalone therapy versus its use in combination with conventional treatments such as finasteride and minoxidil.

3. Assess and summarize existing studies on the efficacy of Botulinum toxin A (BTA) in the treatment of androgenetic alopecia (AGA).

Introduction

Androgenic alopecia (AGA) is a common condition characterized by progressive hair loss in various scalp patterns, significantly impacting self-esteem and mental health. Conventional treatments, including finasteride (a 5-alpha reductase inhibitor) and minoxidil (a topical vasodilator), have demonstrated inconsistent effectiveness and are often accompanied by undesirable side effects. Botulinum toxin type A (BTA), a neurotoxin derived from Clostridium botulinum, is widely recognized for its cosmetic use in reducing facial wrinkles. Emerging evidence suggests that BTA may benefit AGA patients by improving scalp blood flow and reducing tension, potentially enhancing hair growth.

Methods

A systematic search was conducted using the algorithmic phrase "(Androgenetic alopecia) AND (Botulinum toxin) AND (Treatment)" in PubMed, Medline, and CINAHL Plus. Results were filtered to include full-text articles published between 2013 and 2024. These studies included randomized controlled trials, cohort studies, and pilot studies that assessed BTA's efficacy as a standalone therapy and in combination with conventional treatments such as finasteride and minoxidil. Data on hair density, hair loss area, and adverse effects were extracted and analyzed.

Results

From an initial pool of 86 articles, 56 were deemed relevant, and 7 studies were selected for detailed analysis based on alignment with the review's objectives. The 7 selected studies consistently demonstrated that BTA improved hair growth and reduced hair loss in patients with AGA. In a randomized controlled trial by Zhou et al., 22 patients receiving BTA and standard therapy showed significant increases in hair counts compared to placebo ($p < 0.05$). Tian et al. reported a 75.7% increase in hair density in patients treated with BTA combined with finasteride and minoxidil, along with improvements in symptoms such as scalp oiliness and pruritus. Singh et al. observed that 8 out of 10 patients treated with BTA alone exhibited good to excellent hair regrowth within 24 weeks, with no adverse effects. Seoudy and Metwally found that higher concentrations of BTA (33.3 U/mL) led to better hair density improvements compared to lower concentrations (25 U/mL). Across studies, the use of BTA was associated with minimal adverse effects, such as transient pain at the injection site. These findings highlight the efficacy and safety of BTA as a promising therapy for AGA, both independently and in combination with established treatments.

Discussion/Conclusions

Although BTA as a treatment for AGA remains in the early stages of research, existing literature demonstrates promising potential for its efficacy and safety. Further studies are required to establish BTA's long-term role and optimize its integration into current therapeutic protocols for AGA.

Acknowledgments/Disclosures

Laith Basch, BS: concept design acquisition, analysis, interpretation of data

Caden Carver, DO: drafting/revising manuscript

Dr. Daniel Tinker MD, FAAD: manuscript editing

Dr. John Ashurst: Manuscript and editing

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Morphological characteristics of the distal iliopsoas tendon and its relationship to adjacent osseous structures

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Objectives

This study set out to document variation in the location of the lesser trochanter, the morphology of the iliopsoas tendon, and the location of the insertion of the iliopsoas tendon both onto and adjacent to the lesser trochanter. We hypothesized that a significant relationship would exist among these variables, and that the results may provide insight into the pathogenesis of anterior hip pathology.

Introduction

The iliopsoas muscle influences lumbo-pelvic posture and gait stability, and distal portions of the muscle contribute to common anterior hip pathologies including iliopsoas bursitis, impingement, and tendinopathy. Diagnosis of the underlying etiology of hip pain is made more difficult by the association of concomitant lumbar spine and knee joint pain often reported by these patients.[1] Furthermore, iliopsoas pathology may be intrinsically linked to the development and resolution of low back pain (LBP), with previous research highlighting that psoas syndrome resolution following OMT predicted a greater rate of LBP resolution in patients.[2] Despite the important role of this muscle, anatomical variation of iliopsoas musculotendinous morphology and its relationship to distal osseous landmarks remains poorly described.

Methods

Dissection of the anterior hip musculotendinous complex was used to facilitate data acquisition from 45 body donors, including categorical data on tendon morphology and linear measurements between osseous structures. Measurements were collected between the anterior superior iliac spine (ASIS), lesser trochanter (LT), pubic tubercle (PT), and medial and lateral femoral epicondyles, and angles between the landmarks were calculated trigonometrically. Correlation analyses assessed associations between variables, including partial correlation analyses that treated sex as a covariate. Independent sample t-tests assessed differences in linear and angular variables between sexes, tendon morphotypes, and individuals with and without psoas minor ($p<0.05$).

Results

Iliopsoas tendons were classified into three morphotype categories: notched (53%), fan-shaped (25%) and narrow (22%). Narrow tendons were more common in males (25.8 vs. 16.7%; not significant), with fan-shaped tendons more common in females (33.3% vs 19.4%; not significant). Among tendon categories, fan-shaped tendon had a higher mean LT angle (53.7° vs 49.9° in the other two categories), but none of the variables differed significantly. Females had a higher mean angle from the LT (ASIS-LT, LT-PT). A significant negative correlation was identified between femur length and angle from the LT

(R=-0.356, p<0.001). Significantly more females had a psoas minor (p=0.024), and a higher mean angle from the LT was observed when psoas minor was present (t=2.199, p=0.031). Overall, there was a significant relationship between sex and osteological structure, as well as a correlation between wider pelves and shorter femora.

Discussion/Conclusions

The identification of distinct tendon morphotypes and relationships between the musculotendinous complex and osseous landmarks provides novel insight into iliopsoas morphology and illuminates a path for determining the relationship between anterior hip morphology and pathology. Findings may assist clinicians' understanding of which anatomical variations predispose patients to the development of clinical symptoms, thus improving screening processes and the identification of patients at risk of developing anterior hip pathology.

Acknowledgments/Disclosures

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Sex-Specific Expression of Phthalate-Metabolizing Enzymes in the Livers of CD-1 Mice Following DEHP Exposure

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Objectives

What are the sex-specific differences in DEHP metabolism in the livers of CD-1 mice?

Introduction

Di-2-ethylhexyl phthalate (DEHP), a member of the phthalate family, is a widely used plasticizer that imparts flexibility to plastics and is present in numerous consumer products, including medical devices, food packaging, and personal care products. As a potent endocrine disruptor, DEHP poses health risks through inhalation, ingestion, and dermal contact. Being lipophilic,

DEHP persists in the environment, leading to prolonged effects even from low-level exposures. Chronic exposure has been associated with a range of adverse effects, including hormonal and reproductive health issues. Investigating sex differences in the metabolism of DEHP could provide insights into differential susceptibility to its toxic effects and hormonal changes. This research may also help evaluate whether holistic approaches, traditionally used to address reproductive health issues in both women[1] and men, could be effective in managing health problems linked to phthalate exposure.

Methods

In this study, 60-day-old male and female CD-1 mice were administered corn oil (control) or DEHP at doses of 20 µg/kg/day (20DEHP), 200 µg/kg/day (200DEHP), or 1000 mg/kg/day (1000DEHP) via mouth pipetting for 12 days in males and 10-14 consecutive days in females. The 20 and 200 µg/kg/day doses mimic human exposure levels[2], while the 1000 mg/kg/day dose is commonly used in toxicology studies. Two hours after the final treatment, liver tissues were collected and immediately frozen. Hepatic RNA was extracted, followed by cDNA synthesis. Quantitative PCR (qPCR) analysis was then performed to assess the expression levels of genes involved in DEHP metabolism, including *Adh1* (alcohol dehydrogenase 1A), *Aldh1a1* (aldehyde dehydrogenase 1 family member A1), *Iah1* (isoamyl acetate hydrolyzing esterase 1), and *Tbp* (TATA-box binding protein, used as a housekeeping gene).

Results

Our findings showed a significant increase ($p < 0.05$) in hepatic expression of *Adh1* and *Iah1* in female mice (N=3) compared to male mice (N=5) in the control groups. However, no significant sex-based differences were observed in the expression of *Aldh1a1*. When comparing the control and DEHP-treated groups, *Adh1* expression was significantly decreased in the 20DEHP and 1000DEHP groups in female livers compared to controls. No significant changes were observed in *Aldh1a1* or *Iah1* expression in females. In male livers, *Iah1* expression was significantly decreased in the 20DEHP group compared to controls, but no changes were observed in the other DEHP groups. Additionally, there were no changes in the expression of *Aldh1a1* or *Adh1* in male livers.

Discussion/Conclusions

These findings suggest that the gene expression of enzymes involved in phthalate metabolism differs between male and female livers. Additionally, DEHP was found to alter the gene expression of enzymes involved in its metabolism differently between sexes. These effects may lead to increased susceptibility to adverse outcomes from DEHP exposure, including potential liver damage and endocrine disruption. Understanding these sex differences is crucial for accurate risk assessment and developing tailored public health strategies to reduce exposure and safeguard overall health.

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Sex-Specific Differences in Gonadal Phthalate- Metabolizing Enzymes and the Effects of Di-2-Ethylhexyl Phthalate

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Objectives

Are there sex-specific differences in the gene expression of phthalate-metabolizing enzymes in the gonads, and how does DEHP affect these enzymes in male and female CD-1 mice?

Introduction

Treatment for infertility in the current landscape can be expensive and is often paid out-of-pocket by most affected individuals[1], which can lead to financial hardship and diminished quality of life for infertile couples. Infertility rates are rising globally, and phthalates, common chemicals in food packaging, cosmetics, and medical supplies like dialysis tubing, are being scrutinized for their endocrine-disrupting effects. Studies have indicated that di-2-ethylhexyl phthalate (DEHP) can interfere with steroidogenesis, particularly affecting testosterone and estrogen levels, consequently disrupting germ cell development in the ovary and testis[2,3]. Understanding sex-specific differences in the gonadal metabolism of phthalates could illuminate mechanisms underlying these health risks, providing critical insights for future therapeutic interventions or prevention strategies in clinical settings.

Methods

In this study, 60-day-old female and male CD-1 mice were orally administered either corn oil (control) or 200 µg/kg/day of DEHP, an environmentally relevant human exposure dose, for 12 days in males and 10-14 days in females. After treatment, testes and ovaries at the proestrus/estrus stages were collected for RNA extraction. The expression levels of key genes involved in DEHP metabolism, specifically *Lpl* (lipoprotein lipase), *Adh1 (*alcohol dehydrogenase 1A)*, Aldh1a1* (aldehyde dehydrogenase 1 family

member A1)*, Cyp1b1 (*cytochrome P450 family 1 subfamily B member 1), and the housekeeping gene *Tbp* (TATA-box binding protein) were assessed using qPCR analysis in both male and female gonads.

Results

Interestingly, gene expression analysis revealed significant sex-specific differences (p-value < 0.05) in the expression of *Lpl*, which catalyzes the hydrolysis of diesters to monoesters. Additionally, sex differences were observed in the expression of the oxidation enzymes *Adh1* and *Aldh1a1*, as well as the cytochrome P450 enzyme *Cyp1b1*. The expression of these genes was significantly higher (p-value < 0.05) in the ovaries (N=3) compared to the testes (N =3-5). However, DEHP treatment did not result in significant changes in the expression of these genes in either male or female gonads when comparing oil-treated and DEHP-treated mice.

Discussion/Conclusions

These findings highlight intrinsic sex differences in gonadal phthalate metabolism, suggesting that males and females may have distinct vulnerabilities to phthalate exposure. Future research should investigate whether these metabolic differences influence the development of infertility or endocrine-related conditions, thereby providing valuable insights for personalized approaches to treatment and prevention.

Acknowledgments/Disclosures

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Secondary outcomes of bempedoic acid efficacy in reducing LDL and adjusting for myalgia in statin-intolerant individuals

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Objectives

This literature review aims to synthesize evidence on bempedoic acid's mechanism of action, efficacy, and safety profile, emphasizing its role in managing hypercholesterolemia in statin-intolerant individuals. It highlights the clinical and therapeutic implications of this novel treatment and underscores the importance of continued investigation into its long-term benefits and risks.

Introduction

Although maximum-dose statins remain a leading treatment for decreasing LDL-C levels by 50% [1], adverse effects are becoming of increased concern. Bempedoic acid is an emerging alternative therapy for statin-intolerant individuals and addressing unfulfilled demand for effective cardiovascular risk and cholesterol reduction in this population. Approximately 10% of statin users experience statin intolerance, with myalgia being the most common adverse effect. This hinders patient adherence to common lipid-lowering treatments. Without having a direct effect on the skeletal muscle cells, bempedoic acid lowers low-density lipoprotein cholesterol (LDL-C) levels by inhibiting ATP-citrate lyase, an upstream enzyme of HMG-CoA reductase. Its reliable safety profile proven by several clinical research makes it a promising substitute for statin-intolerant patients. Bempedoic acid has shown efficacy comparable to that of other non-statin treatment options, including PCSK9 inhibitors and ezetimibe. Despite these advantages, it is known to cause rare adverse reactions, such as hyperuricemia and tendon rupture.

Methods

Search engines such as google scholar and Yale MeSH Analyzer were used to systematically review literature on the effectiveness and benefits of bempedoic acid. Key words such as bempedoic acid benefits and efficacy were used to narrow our search. Data was gathered on bempedoic adverse affects and ability to lower cholesterol levels to identify patterns in its use.

Results

Analysis of bempedoic acid suggests it is relatively safe. No major adverse effects were noted compared to placebo groups. The drug requires activation by acyl-CoA synthetase-1 (ACSVL1) to its active form, bempedoyl-CoA. ACSVL1 is exclusively expressed in the liver and absent in skeletal muscle, significantly reducing the likelihood of muscle-related side effects [3]. The results of the CLEAR Serenity [4] the Ray et al. (2019) [5] studies demonstrate that bempedoic acid is effective at reducing LDL-C in statin-intolerant patients by 21.4% and 16.5% respectively.

Discussion/Conclusions

Questions on the long-term cardiovascular benefit remain, as most studies have only evaluated bempedoic acid's short-term effects. Combination therapies involving bempedoic acid and other lipid-reducing agents offer a promising avenue for better LDL-C reduction. Bempedoic acid is usually more affordable than PCSK9 inhibitors, making it an attractive alternative for patients without comprehensive insurance coverage. Although bempedoic acid is less robust

than PCSK9 inhibitors in decreasing LDL-C, its comparable efficacy to ezetimibe and its ability to address myalgia offer unique value. Bempedoic acid provides a potential alternate solution for individuals with statin intolerance.

Acknowledgments/Disclosures

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Current disparities in gender and medical degree among emergency medicine authors

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Objectives

The objective of this research is to determine the current levels of disparity in gender (male versus female) or medical degree (MD versus DO) among first, second, and last or senior authors of original research publications in five high-impact emergency medicine (EM) journals, over five years (2019-23).

Introduction

Previous investigations of the demographics of authors publishing research in emergency medicine (EM) have demonstrated a disparity in rates of publication, with male authors publishing more than female authors[1] and allopathic (MD) authors publishing more than osteopathic (DO) authors.[2,3]

Methods

This was a retrospective study of original research in five high-impact EM journals (Academic EM, American Journal of EM [AMJEM], Annals of EM, Journal of EM [JEM], Western Journal of EM [WJEM]). All original research published in the five journals over five years (2019-23) was aggregated (n=2,384). (Note: research is ongoing, with approx. 94% of target data collected and summarized here). The gender, medical degree, and other academic degrees were tallied for all first, second, and last authors. Individuals for whom gender or academic credentials could not be verified were excluded from the statistical analysis. Statistical analysis was performed on comparisons of the number of MD versus DO authors (Table 1), including a comparison of the total number of MD and DO authors (Kruskal-Wallis test, $\alpha = 0.05$) as well as a comparison of the distribution amongst first, second, and last authors (Chi-squared test, $\alpha = 0.05$). The same comparisons were performed for male versus female authors (Table 2).

Results

2,385 articles were aggregated with a total of 16,804 named authors, with 4,991 authors designated as first, second, or last and tabulated by gender and degree. Publishing authors in high-impact EM journals over the five years were disproportionately more MD (94-97%) than DO (2-6%, ratio MD:DO=11.5, $p<0.001$) and more male (59-72%) than female (27-41%, ratio M:F=1.4, $p<0.001$). The same disparities exist between first, second, and last authors, with the single largest difference in medical degree type among last authors (ratio MD:DO=34.5, $p<0.001$), meaning 97.3% of last authors were MD versus 2.7% that were DO.

Discussion/Conclusions

These results highlight the disparity in rates of EM publications, consistent with that of previous research. While research by male authors is published at disproportionately higher rates than research by female authors, these findings agree with that of other research, suggesting that the proportion of publications from female authors has increased steadily over time. The disparity between MD and DO authors, however, has remained more constant, with DO authors still comprising less than 7% of first, second, or last authors in high-impact EM research.

In original research published across five high-impact EM journals over five years (2019-23), there remains a disparity in rates of publication between MD and DO authors. Additionally, female physicians are under-represented when compared to their male counterparts; however, this disparity has decreased in recent years.

Acknowledgments/Disclosures

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Trends in Female Authorship During the Breast Paper Session at Plastic Surgery: The Meeting, 2016-2020

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Objectives

To analyze gender differences in authorship of abstracts and authorship retention after manuscript publication at Plastic Surgery: The Meeting from 2016 to 2020 during the Breast Paper session.

Introduction

Competitive surgical subspecialties expect candidates to possess robust research portfolios. Historically, research authorship positions have been male dominated. Initiatives supporting female researchers have led to increased female authorship, yet studies exploring these trends and if differences exist in authorship retention from abstract to manuscript publication remain limited.

Methods

A cross-sectional sample of all abstracts from 2016 through 2020 labeled as “Breast Paper” from Plastic Surgery: The Meeting were included in the analysis. Abstract characteristics

including author position (first, second, and last), gender, and publication status were reviewed. Gender was determined through an internet search of public databases using the author's full name. Abstracts with unclear first author gender were excluded, while abstracts with unidentified second or last authors were included in an intention-to-treat analysis. Among abstracts that became manuscripts, gender of first and last author were reviewed for authorship retention. Data was analyzed with chi-square for categorical data and Mann-Whitney U for continuous data.

Results

A total of 194 abstracts were included. 555 total authors were categorized based on first, second and last authorship. Males represented 64% and females 36% of total authors. Females represented 43%, 42%, and 24% of first, second, and last authors, respectively. A difference was noted between overall male vs. female authorship. Male first authors were more likely to have a concurrent male second author (p=0.025). There was no difference in the gender of first authors on abstracts later published as manuscripts (p=0.34). Male first (p=0.029) and last (p=0.028) authors were more likely to lose authorship position upon manuscript publication compared to females (48% male vs 70% female first author retention; 75% male vs 84% female last author retention). When male first and last authors were replaced, the replacement was more likely to be a different male (61% male vs. 39% female first author replacements; 81% male vs. 19% female last author replacements). Female first and last authors retained authorship on manuscripts more than males, but when replacement occurred it was more often a male (85% male vs. 15% female first author replacements; 57% male vs. 43% female last author replacements).

Discussion/Conclusions

Females comprise a significant portion of first authored abstracts at the conference despite an overall representation deficit compared to males. The lack of difference seen in manuscript publication rates between the genders suggests a trend toward increased female research initiatives. These factors, coupled with high female authorship retention rates compared to males, supports an underlying trend towards research equity at plastic surgery conferences. However, the observed pattern of males comprising the bulk of authorship replacements on manuscripts suggests that male domination of plastic surgery research persists, albeit in a less obvious manner. Further research into the cause of these discrepancies is necessary to uncover how systemically ingrained this pattern might be in plastic surgery.

Acknowledgments/Disclosures

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Assessing the effects of long-term intermittent fasting on intestinal function in a SAMP8 aged mouse model.

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Objectives

Specific Aims:

1. Aim 1: Evaluate the long-term effects of intermittent fasting (IF) on intestinal morphology in aged SAMP8 mice, focusing on villi length and wall thickness.

2. Aim 2: Investigate the impact of IF on glucose transporter expression (GLUT2 and GLUT5) in the jejunum to determine its influence on glucose metabolism.

3. Aim 3: Assess the role of IF in modulating apoptotic activity in the jejunum through cleaved Caspase-3 expression.

4. Aim 4: Analyze metabolomic data to identify specific metabolites and correlate them with molecular mechanisms, particularly those regulating GLUT2 and SGLT1.

Hypothesis:

Long-term intermittent fasting in aged SAMP8 mice modifies intestinal morphology, reduces weight gain, alters glucose metabolism via reduced GLUT2 expression, and decreases apoptotic activity in the jejunum, with sex-specific effects.

Introduction

Intermittent fasting (IF) is a popular dietary intervention known for promoting health across various body systems, including weight loss. SAMP8 (Senescence Accelerated Mouse-Prone 8) mice, with a

lifespan of 9-12 months, serve as a model for studying age-related physiological changes. This study aimed to investigate the effects of IF on the structural and functional integrity of the jejunum in aged SAMP8 mice.

Methods

Male and female SAMP8 mice were randomly assigned to either an IF protocol (24-hour alternate-day fasting) or an ad-libitum diet (AL) for 8 months, starting at 2 months of age (n=15/group). At study completion, jejunal samples were stored at - 80°C or fixed for histological analysis. Morphological data were collected from H&E-stained sections via light microscopy, and total protein expression was assessed using Western blots.

Results

IF significantly decreased villi length by 21% and wall thickness by 7% in female mice ($P<0.05$). Both male and female IF groups exhibited significantly less weight gain (22% and 33% less, respectively; $P<0.05$) compared to AL groups. In female mice, IF reduced GLUT2 expression by 57% ($P<0.05$), suggesting a shift in glucose metabolism towards more stable blood glucose levels and alternative energy substrates during fasting. No changes were observed in GLUT5 expression. Additionally, IF significantly decreased cleaved Caspase-3 expression in both sexes, indicating reduced apoptotic activity, particularly in females.

Discussion/Conclusions

Intermittent fasting limits weight gain, alters intestinal morphology, modulates glucose metabolism, and reduces apoptosis in the aged murine jejunum. These findings highlight the complex, sex-specific effects of IF on intestinal health and its potential as a therapeutic strategy to mitigate age-related changes in the small intestine. Further research is ongoing to unravel the molecular and metabolomic mechanisms driving these effects. We are in the process of evaluating metabolomic data to identify specific metabolites, with particular attention to those potentially involved in regulating GLUT2 and SGLT1, that are up- or down-regulated in response to IF. Additionally, expression data will be pursued to correlate with the observed metabolomic changes, further clarifying the molecular mechanisms driving these effects.

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Dr. Layla Al-Nakkash, Spencer Vroegop

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Female Abstract Authorship at the Craniomaxillofacial Paper Session of Plastic Surgery: The Meeting, 2016-2020

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Objectives

This study analyzes gender differences in authorship position for abstracts presented at *Plastic Surgery: The Meeting* from 2016 to 2020 in the Craniomaxillofacial Paper session, with further analysis of authorship retention in abstracts later published as manuscripts.

Introduction

The demand for research productivity in surgical subspecialties has risen in recent decades. Traditionally, male authors have occupied the important authorship positions on research projects. However, recent initiatives to support female researchers have increased female authorship. Despite this progress, studies examining whether traditional gender trends persist in abstract presentation to manuscript publication remain limited.

Methods

A cross-sectional analysis of all abstracts presented at *Plastic Surgery: The Meeting* from 2016 to 2020 in the Craniomaxillofacial Paper session was performed. Abstracts were reviewed for author position (first, second, and last), gender, and publication status. Gender was determined via an internet search of publicly available databases using the author's full name. Abstracts with unclear first author gender were excluded, while unidentified second or last authors were included in an intention-to-treat analysis. For published abstracts, time to publication (in months), authorship retention, and gender of the manuscript authors were recorded. Statistical analyses included chi-square tests for categorical data and Mann-Whitney U tests for continuous data, with results presented as frequency and median with interquartile range where appropriate.

Results

A total of 229 abstracts were reviewed with 37.84% reporting a female first author. A statistically significant first author gender difference favoring male authors was present ($p < 0.001$). Both male and female first authored abstracts were more likely to have a male as last author ($p < 0.001$). No significant difference in manuscript publication rates or time to publication between male and female first authored abstracts was observed ($p = 0.905$; $p = 0.24$). However, male last authors were more likely to be replaced than female last authors when abstracts were later published as manuscripts ($p = 0.003$). Male last author replacements were more often a different male (18.2%) rather than a female (1.8%).

Female last authors had full retention of last authorship. A similar difference was not observed for male or female first authors (p = 0.42). When first authorship changes did occur, however, it was noted that female first authors were more often replaced by a female (22.9%) than by a male (8.6%), while male first authors were more often replaced by a male (16.4%) than by a female (5.5%).

Discussion/Conclusions

Female first authors represent a significantly smaller proportion of presented abstracts, but with no gender differences observed in manuscript publication rates. However, the data suggests that when authorship changes occur between abstract presentation and manuscript publication, male and female first authors, as well as male last authors, are more likely to be replaced by individuals of the same gender. Notably, female last authors had full retention of authorship position upon manuscript publication. Further research is needed to explore the causes of these discrepancies and identify characteristics that may contribute to this phenomenon.

Acknowledgments/Disclosures

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Aging and Instability: A macaque model for normal distribution of plantar mechanoreceptors

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Objectives

This study aimed to (1) investigate the distribution of Meissner (MC) and Pacinian corpuscles (PC) across regions of the plantar foot of rhesus macaques (*Macaca mulatta*) and (2) compare the distributions observed in the macaque foot to published data of human mechanoreceptor distributions. We hypothesized that the heel and the toes would differ in mechanoreceptor distributions due to their different functional roles in locomotion in both species. We also hypothesized that mechanoreceptor distributions in the human foot would vary from that of macaques because of their different locomotor styles (bipedalism and arboreal quadrupedalism, respectively).

Introduction

The human foot plays a critical role in maintaining balance and stability during locomotion, with mechanoreceptors such as Meissner (MC) and Pacinian corpuscles (PC) contributing to somatosensory feedback. Age-related declines in mechanoreceptor density are associated with reduced tactile sensitivity, increasing the risk of falls and balance-related injuries. Rhesus macaques are often used as models of human aging. Here, we investigate the distribution of MC and PC mechanoreceptors in the macaque foot's glabrous plantar skin to better understand how mechanoreceptor densities in the macaque and human plantar foot correspond to the functional demands of locomotion.

Methods

At Cayo Santiago, skin samples were collected opportunistically during necropsy from six young adult free-ranging rhesus macaques (3 males & 3 females). Samples included the heel, apical pad of the hallux (digit 1), and apical pads of the toes (digits 3 & 5). Histological sections were stained with H&E to quantify MC and PC densities. Linear mixed models evaluated the effect of skin location, controlling for sex and individual variation.

Results

This study establishes a baseline for mechanoreceptor distribution in the feet of rhesus macaques, contributing to our understanding of sensory adaptations in quadrupedal primates. Before macaques can serve as a model for somatosensory aging or sensory impairments, it is essential first to characterize standard mechanoreceptor distribution patterns in healthy adult individuals.

Age-related changes in mechanoreceptor density, particularly in the feet, have been linked to diminished tactile sensitivity in humans, increasing the risk of falls and balance-related injuries.

Discussion/Conclusions

Our findings suggest that mechanoreceptor distributions in the foot of the rhesus macaque differ from humans in some ways, likely due to their semi-arboreal quadrupedal locomotion. In humans, Pacinian density is more similar between the heel, hallux, and toes compared to macaques, which may reflect the distinct functional demands of bipedal locomotion. However, both species exhibited higher Meissner corpuscle density in the toes, suggesting a shared need to detect texture and object slippage in the toes regardless of locomotor style.

This research provides preliminary data on mechanoreceptor distribution in the foot of a commonly used primate model. Future work should explore the similarities and differences we observed, and how aging affects plantar mechanoreceptor distributions in both humans and macaques. Understanding aging effects on plantar somatosensation can inform future studies, potentially enabling targeted interventions to mitigate fall risks in aging populations. It also emphasizes the need to explore human-specific data for clinically relevant insights.

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Publication characteristics of successful male and female applicants into integrated plastic surgery.

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Objectives

To determine the publication characteristics of successful male and female applicants into integrated plastic surgery from 2018 through 2023.

Introduction

Integrated plastic surgery residency continues to be a top competitive specialty among Doctors of Medicine (MD) and Doctors of Osteopathic Medicine (DO) students.[1] There was a total of 207 residency spots with 332 applicants applying for integrated plastic surgery in the 2023 match, giving a match rate of 62%.2 One must display qualities that distinguishes them from other applicants when applying into the integrated plastic surgery route. These include top USMLE scores, AOA membership, and appreciable research experiences across all applicants[3]. This provides challenges for DO students as there is lower research production and recent changes of USMLE step 1 to pass/fail.[4] For first year integrated plastic surgery residents matriculating in 2022-2023, the average number of abstracts, presentations, and publications was 28.7.[5] This illustrates the possible overinflation when determining the number of publications needed to make an applicant competitive as it lacks distinction from abstracts and presentations.

Methods

The study consisted of a retrospective cohort of integrated plastic surgery applicants who matriculated between 2018 and 2023. All demographic data was collected from each program's website and when a resident's data could not be found they were removed from analysis. Publication data including the manuscript's topic (plastic surgery or non-plastic surgery), type of manuscript (article or review), and author position (first, second, or other) from six months prior to matriculation into residency was obtained from SCOPUS. Data are reported as a median with interquartile range and was analyzed using either a Wilcoxon Rank test or an uncorrected Kruskal-Wallis test. The Spearman's correlation was utilized to calculate all correlations.

Results

A total of 1005 integrated plastic surgery residents who published 2938 manuscripts were included in the final review. The majority of those reviewed were female (52.2%) and allopathic physicians (97.9%). When examining trends over time, a statistically significant trend for increased publication numbers was noted for both male ($r=0.30$, $p<0.001$) and female ($r=0.24$, $p<0.001$) applicants over time. No statistically significant difference in total publications was noted between affiliated and university residency programs based upon gender (male $p=0.342$; female $p=0.076$). However, females who attended a medical school ranked in the top 20 for NIH funding had statistically significant more

publications than those who did not ($p<0.001$). Males had significantly more total publications ($p<0.05$) and plastic surgery related publications ($p<0.05$) as compared to females during the time studied.

Discussion/Conclusions

Over the last several years, there has been an increased number of publications by successful male and female applicants into integrated plastic surgery residencies. Despite there being little difference amongst the genders when total publications were considered, a gap still exists between male and female applicants.

Acknowledgments/Disclosures

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