

SMA's 2023 Annual Scientific Assembly Abstract Presentations

The following abstracts were presented during the Southern Medical Association's 115th Annual Scientific Assembly, in Greensboro, North Carolina, October 26-28, 2023, and are listed in the original order of presentation. Abstracts are published as submitted.

Oral Abstract Presentations

Novel alpha-calcitonin gene related peptide agonist analogs in the treatment of cardiovascular disease

Category: Medicine & Medical Subspecialties

Disclosure: The authors did not report any financial relationships or conflicts of interest

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Background

As a potent vasodilator neuropeptide, alpha-calcitonin gene related peptide (α -CGRP) possesses cardioprotective effects. In animal models, α -CGRP has demonstrated such effects in a variety of cardiac diseases including heart failure, hypertension and myocardial infarction. This suggests that α -CGRP is a potential drug candidate for the treatment of cardiac diseases; however, low bioavailability of the peptide negates this possibility.

Methods

In order to develop stable protease-resistant α -CGRP analogs, we used a peptoid chemistry approach and chemically synthesized two α -CGRP analogs linking two molecules of N-methoxyethylglycine (NMEG) peptoid molecules to either the N-terminal end (N-ter NMEG-CGRP) or C-terminal end (C-ter NMEG-CGRP) of the peptide. A peptoid is a N-substituted glycine molecule in which the side chain is attached on the nitrogen atom rather than the α -carbon atom. Both peptoid-peptide hybrids (at concentrations 1 μ M, 3 μ M, and 10 μ M) were incubated for 4 days with rat H9c2 cardiac cells and their toxicity was measured using MTT-cell viability assay. Our results demonstrated that both peptoid-peptide hybrids did not affect the viability of the cardiac cells. To test if these peptides were bioactive, a subcutaneous injection of

either peptide (at dose 1.2, 3.6, and 12 (mg/kg b.wt. per mouse) was given to male C57BL6 mice (n= 4 mice/dose) and mice blood pressure (BP) was measured at different time intervals using a tail-cuff BP analysis system.

Results

Our results demonstrated that both peptide-peptoid hybrids are non-toxic to cardiac cells and N-ter NMEG-CGRP reduced blood pressure in mice in a time-dependent manner. However, a reduction in BP was not observed when C-ter NMEG-CGRP was a subcutaneously injected in mice.

Conclusion

In summary, our results showed that although both peptoid-peptide hybrids (N-ter NMEG-CGRP and C-ter NMEG-CGRP) were non-toxic to H9c2 cardiac cells but only N-ter NMEG-CGRP is bioactive in mice. Therefore, N-ter NMEG-CGRP is a promising α -CGRP agonist analog to treat cardiovascular diseases.

Learning Objective(s)

1. The need for novel therapy for the treatment of cardiovascular diseases
Despite the several classes of drugs available for cardiovascular diseases, it remains the number one cause of death of individuals, not only in the United States, but also globally. Therefore, it is evident that the development of novel therapeutic agents are not only necessary but soon to be inevitable in order to combat the rising trends seen in CVDs.
2. Utilization of alpha-calcitonin gene related peptide (α -CGRP) for the treatment of cardiovascular disease
Alpha-calcitonin gene related peptide (α -CGRP) is a 37 amino acid anti-inflammatory vasodilator neuropeptide. Pre-clinical studies have proven that the peptide protects against a variety of heart diseases such as heart failure and hypertension. Hence, it can be translated as a therapeutic agent to treat these diseases.
3. Development of stable bioactive agonist analogs of alpha-calcitonin gene related peptide (α -CGRP) for the treatment of cardiovascular disease
Native α -CGRP half-life is very short due to its rapid degradation via protease; therefore, it has been difficult to use previously as a therapeutic agent. We are using a peptoid chemistry approach to develop stable bioactive α -CGRP agonist analogs. We chemically linked two molecules of N-methoxyethylglycine (NMEG) to either the N-terminal end (N-ter NMEG-CGRP) or C-terminal end (C-ter NMEG-CGRP) of the peptide. The peptide-peptoid hybrid containing N-ter NMEG-CGRP proved to be both non-toxic and bioactive and therefore, it is a promising α -CGRP agonist analog to use as a novel therapy for cardiovascular diseases such as heart failure and hypertension.

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Nausea and Vomiting in a Teenager, Treated as Cholecystitis, Found to have Castleman Disease

Category: Medicine & Medical Subspecialties

Disclosure: The authors did not report any financial relationships or conflicts of interest.

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Introduction

Castleman disease, also known as angio-follicular lymph node hyperplasia, is a rare condition which exists on a spectrum characterized by unique histological and clinical findings. Its presentation can vary however, it may mimic several other conditions and early differentiation can spare patients unnecessary procedures. To demonstrate this process, we are presenting a case of idiopathic, multicentric Castleman disease in a 19-year-old immunocompetent female, who presented with abdominal swelling and heliotrope rash.

Case Presentation

A 19-year-old female with no significant medical history, presented following two months of episodic nausea, vomiting and diarrhea. Pregnancy was excluded and her symptoms were

attributed to acute calcular cholecystitis, for which she underwent a cholecystectomy. A few weeks after the procedure, the patient noted abdominal distention and weight gain with serous fluid oozing from the surgical site. An abdominal ultrasound revealed hepatosplenomegaly and ascites. She appeared ill with profound fatigue without myalgias and was admitted for further evaluation. Abdominal swelling with pitting edema of the lower extremities was appreciated on examination. Her upper eyelids appeared puffy with purple discoloration. Computed Tomography of the chest, abdomen, and pelvis confirmed the ultrasound findings and showed moderate pericardial effusion with diffuse lymphadenopathy.

A hepatitis panel, HIV test, Monospot test, ANA, and individual immunoglobulin levels were not remarkable.

Laboratory testing showed a hemoglobin of 10.6 g/dL, a wide gamma gap of 4.1 and elevated ESR, CRP and ferritin. She had elevated serum free light chains with a ratio of 1.68. Serum immunofixation testing showed no monoclonal proteins.

Axillary lymph node biopsy revealed increased follicles with regressed germinal centers, concentric rimming of mantle zones, occasional twinning of germinal centers with perpendicularly oriented vessels, and prominent vascularity in inter-follicular zones, consistent with HHV-8 negative, idiopathic multicentric Castleman disease (HHV-8 negative iMCD).

Immunohistochemistry testing supported the histopathologic interpretation and a bone marrow biopsy revealed normocellular marrow.

Final Diagnosis

The patient was diagnosed with HHV-8 negative iMCD.

Management/Follow up

She started siltuximab every 3 weeks with marked clinical improvement noted.

Learning Objective(s)

1. An attempt must be made to keep a broad differential early and to rule out the differentials each prior to committing the patient to a potentially unnecessary procedure.
2. It is important to keep Castleman disease in mind, and high on the differential, for all patients presenting with significant anasarca.

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A Rare Presentation of Metastatic Sclerosing Epithelioid Fibrosarcoma with Spinal Cord Compression

Category: Medicine & Medical Subspecialties

Disclosure: The authors did not report any financial relationships or conflicts of interest.

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Introduction

Sclerosing epithelioid fibrosarcoma is an extremely rare malignant soft tissue tumor that predominantly affects adults and can manifest at any anatomical site. Previous studies have suggested that approximately 30% to 53% of patients experience local recurrence following treatment. The rate of distant metastasis can vary considerably, ranging from 20% to 86%. This case illustrates a rare case of metastatic cord compression of sclerosing epithelioid fibrosarcoma after definitive surgical treatment.

Case Presentation

A 68-year-old male patient with a past medical history of skin cancer removal on the left flank in

2019, which was pathologically confirmed as sclerosing epithelioid fibrosarcoma, presented to the emergency department due to worsening back pain. He reported a weight loss of 25 pounds over the past several months, but denied experiencing fever, chills, nausea, or vomiting. Upon physical examination, bilateral lower extremities weakness (grade 2/5) was noted, while no significant tenderness or skin changes along the spine were observed. Vital signs were normal. Routine lab work was unremarkable.

The previous PET/CT and bone scan, which took place one year after the surgery, were reviewed and negative for any abnormal uptake. However, metastatic cord compression was strongly suspected considering the past medical history and symptoms. Thoracic MRI taken during this admission revealed multiple large enhancing masses with spinal cord compression at T6, indicative of metastatic bone lesions. Additionally, lumbar MRI showed multiple enhancing lesions, with the largest lesion observed at L2. CT scans of the chest, abdomen, and pelvis did not reveal any signs of metastasis. The patient underwent emergent palliative radiation therapy and intravenous dexamethasone to manage cord compression with the working diagnosis of metastatic cord compression. Surgical decompression was not considered due to extensive lesions on the spine.

Final Diagnosis

A CT-guided biopsy of the T6 vertebral body was performed, confirming the presence of metastatic sclerosing epithelioid fibrosarcoma.

Management and follow-up

The patient completed a 5-day course of palliative radiation therapy and steroid therapy, which resulted in improvement of symptoms. Hematology/oncology was consulted, and outpatient chemotherapy was planned. Subsequently, the patient was discharged to a rehabilitation facility for additional physical therapy.

Learning Objective(s)

1. Upon completion of this lecture, learners should be better prepared to diligently monitor the patient with sclerosing epithelioid fibrosarcoma and remain vigilant to prevent or promptly identify any potential cancer metastasis in the long term. Sclerosing epithelioid fibrosarcoma is an extremely uncommon soft tissue tumor that can arise in various locations throughout the body. Recurrence of sclerosing epithelioid fibrosarcoma is not infrequent, and metastasis to distant organs can occur, even following successful treatment, as illustrated in this case.
2. Upon completion of this lecture, learners should be better prepared to maintain a high level of suspicion when patients with a history of cancer present with deteriorating back pain, particularly when accompanied by neurological abnormalities. Metastatic spinal cord compression is an oncological emergency that requires emergent management. It manifests as back pain and neurological abnormalities, including weakness, numbness, or cramping in extremities. When cord compression occurs at the level of cauda equina, it can also cause cauda equina syndrome.
3. Upon completion of this lecture, learners should be better prepared to treat the patient

with metastatic cord compression timely. Patients presenting with this metastatic spinal cord compression should promptly receive intravenous dexamethasone and undergo cord decompression treatment. Available treatment modalities include surgical decompression and radiation therapy, as exemplified in this case. The selection of a definite treatment should be personalized and take the account the degree of neurologic compromise, radiosensitivity of cancer, and systemic burden of cancer. Failure to prompt treatment results in dire permanent damage to neurological function.

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Rare Case of Cardiac Fibroelastoma-Cause of Embolic Stroke

Category: Medicine & Medical Subspecialties

Disclosure: The authors did not report any financial relationships or conflicts of interest.

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Introduction

We are presenting a case of embolic stroke due to papillary fibroelastoma of aortic valve.

Case Presentation

73-year-old female with past medical history of DM, hypertension, septic arthritis right knee (around 2 months back) and gout came with history of found unconscious by her daughter for unknown duration one day back. The patient was taken to a nearby hospital where CT head showed multifocal areas of hypodensity throughout both cerebral hemispheres and cerebellum suggestive of subacute embolic infarcts. She was referred to our hospital. At our hospital, on presentation, BP was 180/82 mm Hg. On examination, the patient was drowsy but followed

commands. The neurological examination was significant for power 4/5 in right upper extremity and left lower extremity and 2/5 in left upper extremity and right lower extremity which was limited by pain in left shoulder and right knee. She developed a fever of 104.1 F. DD included cardioembolic stroke vs septic cerebral emboli for which workup was initiated. MRI brain showed multifocal bilateral cerebral and cerebellar acute infarcts with associated petechial hemorrhage, mild enhancement of bilateral parietal infarcts. CTA head showed 60% proximal right ICA stenosis and 40% proximal left ICA stenosis. Blood cultures were negative.

Final diagnosis

TTE was unremarkable so TEE was done which showed normal LV systolic function, no ASD, no VSD, no PFO, EF 55 to 60%, no evidence of vegetation, no intracardiac clot, but it showed that aortic leaflet left coronary cusps has suspicious fibroelastoma.

Management

The patient underwent exploratory cardiectomy and excision of aortic valve mass. Pathological report of the excised mass showed benign papillary fibroelastoma, tumor of aortic valve. Patient's post-operative period was complicated by right lung atelectasis, right sided pleural effusion, hypoxic respiratory failure, AKI and new onset paroxysmal AF. The patient was eventually discharged to the rehabilitation center on aspirin and statin. Anticoagulation was not given on discharge as new onset AF developed in the post-operative period. This is a very interesting case as while evaluating embolic stroke and fever, we did TEE which showed papillary fibroelastoma, a rare finding which was the cause of the embolic stroke.

Learning Objective(s)

1. This case shows that we should consider cardiac papillary fibroelastoma (PFE) in the differential diagnosis while evaluating for cardioembolic stroke. The role of antiplatelet and anticoagulation is not clear in PFE, and further studies are needed to establish this.
2. Study done by Tamin SS et al¹ showed that PFE is the most common benign cardiac neoplasm of adulthood. This finding could be due to increasing use of echocardiography, better technology with improved resolution, enhanced awareness of PFE, and an aging population.
3. Study by Tamin SS et al¹ recommend that patients who are good surgical candidates (Society of Thoracic Surgeons score <1%) with left sided PFE (regardless of size, mobility, or location), surgical excision should be considered.

References and Resources

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Effective Vaccination for *Klebsiella pneumoniae* Elicits Epigenetic Changes in T-cells and Requires IL17rc on Lung Fibroblasts

Category: Medicine & Medical Subspecialties

Disclosure: The authors did not report any financial relationships or conflicts of interest.

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Background

We have previously demonstrated that mucosal vaccination with the *Klebsiella pneumoniae* outer membrane component OmP-X and the adjuvant LTA-1 elicits antigen-specific lung tissue resident memory T (TRM) cells which afford protection from subsequent Enterobacteriaceae challenge. We have shown that vaccine efficacy requires lung epithelial and fibroblast IL-17RC signaling. However, the downstream effector molecules expressed by these cells remain unclear. Prior studies suggest IL-17RC signaling in fibroblasts regulates several C-C and CXC chemokines that CCL2 (MCP-1) is secreted by fibroblasts in response to IL-17A. Thus, we hypothesized that the CCL2 and its receptor (CCR2) may be required for protective Th17 TRM effector functions.

Methods

Mice with and without a variety of genetic modifications with targeted effects on their lung fibroblasts and circulating monocytes were either vaccinated or treated with a vehicle control. They were subsequently boosted after 21 days. 7-30 days later, they were either challenged with K1 (a hypervirulent *Klebsiella pneumoniae* strain) or they had their lungs analyzed by flow cytometry using a novel compartment staining modality, by ATAC seq, or using qPCR.

Results

Vaccinated control (C57Bl/6) mice had lower bacterial burdens than their unvaccinated (vehicle control) counterparts. In contrast to control mice, vaccinated mice lacking CCR2 are less protected from challenge. Thus CCR2 is a necessary component of the signaling cascade underpinning vaccine efficacy. Flow cytometry with intravascular staining revealed increased in the macrophage populations in the lung interstitial compartment and showed increased expression of CD206. Further analysis of chromatin condensation by ATAC seq, and mRNA transcript measuring has further elucidated the OmP-X LTA1 vaccine's mechanism of protection.

Conclusions

Fibroblasts require intact IL17rc signaling for TRM mediated vaccine efficacy and may be responsible for effector cell recruitment to the interstitial compartment of the lung in addition to luminal neutrophils. This may prove to be crucial to OmpX LTA1 vaccine efficacy.

Learning Objective(s)

Upon completion of this lecture, learners should be better prepared to:

1. describe how some vaccines leverage T cell responses rather than antibody responses.
2. explain how vaccine design can be optimized to target multiple pathogens and
3. discuss the advantages of mucosal vaccination for respiratory pathogens.

References and Resources

1. Initial Publication on this vaccine from our lab:
2. Naoki Iwanaga et al. ,Vaccine-driven lung TRM cells provide immunity against Klebsiella via fibroblast IL-17R signaling.Sci. Immunol.6,eabf1198(2021).DOI:10.1126/sciimmunol.abf1198

Atriocaval Shunt as Damage-Control Surgical Technique for Complex Pancreaticoduodenal and Juxta Hepatic Inferior Vena Cava (IVC) Injury

Category: Surgery & Surgery Subspecialties

Disclosure: The authors did not report any financial relationships or conflicts of interest.

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Introduction

Injuries to the juxtahepatic inferior vena cava (IVC) are rare and often fatal. Limited successful uses of the atriocaval shunt as a damage control maneuver have been reported, and the prolonged use of the shunt outside the OR remains unreported. This case presentation describes the use of an atriocaval shunt in a patient with complex liver, pancreatic head, duodenal, and juxtahepatic IVC injuries, highlighting the novelty of its prolonged use.

Case Presentation

A 29-year-old man with multiple midepigastriac gunshot wounds presented with confusion, diaphoresis, and inability to lie flat. PE showed HR146, BP146/117, RR37, and an additional penetrating wound on his back. A midline laparotomy revealed extensive injuries, including a juxtarenal IVC injury and a large right renal vein laceration. To avoid bilateral kidney loss, an atriocaval shunt was placed as a temporary measure, remaining in place for several hours until the patient's condition improved. Following rewarming and resuscitation, the patient underwent IVC repair.

Working Diagnosis

The patient presented with multiple gunshot wounds, resulting in injuries involving the liver, pancreas, duodenum, and juxtahepatic IVC. The working diagnosis included traumatic coagulopathy, hypothermia, acidosis, and potential loss of renal function.

Outcome

The atriocaval shunt provided temporary blood flow diversion, facilitating resuscitation and stabilization. After embolization and rewarming, the IVC injury was repaired, resulting in approximately 70% narrowing. The patient underwent additional procedures for pancreaticoduodenectomy and stenting of the IVC stenosis. Anticoagulation therapy was administered, and the patient was discharged after a 37-day hospitalization.

Discussion

Injuries to the IVC, especially in the suprarenal and retrohepatic regions, are challenging and often fatal. Direct vascular control, ligation, or endovascular interventions are other employed strategies. The atriocaval shunt is an alternative in situations where conventional vascular control techniques are unlikely to succeed.

Conclusion

This case highlights the successful utilization of an atriocaval shunt as a temporizing measure in a complex trauma patient with juxtahepatic IVC injury. The novelty lies in the prolonged use of the shunt beyond the initial operation, allowing for further resuscitation and subsequent repair. More extensive case reporting is required to evaluate this approach's efficacy and long-term outcomes in similar cases.

Learning Objective(s)

Upon completion of this lecture, learners should be better prepared to:

1. Discuss the significance of atriocaval shunt surgery as a potentially lifesaving procedure for emergent suprarenal IVC injuries.
2. Demonstrate the unique surgical technique of leaving in the atriocaval shunt for several hours before removal.
3. Analyze the clinical outcomes and benefits of the unique surgical technique used in atriocaval shunt surgery.

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Needs Assessment for MUSC ACCESS Program Among M4's & Preliminary Residents

Category: Global Healthcare

Disclosure: The authors did not report any financial relationships or conflicts of interest.

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Background: The Virginia Commonwealth University's ACCESS (Acute Care & Systems Strengthening in Low Resource Settings) Program designed by/for trainees focuses on a longitudinal, competency-based global health curriculum with lectures, seminar discussions, research, community engagement, and international bidirectional partnerships. The purpose of this study is to assess the need for a MUSC ACCESS Program and the importance of residency global health options to graduating MUSC medical students currently in the Match.

Methods: A five-question survey was distributed to graduating 4th year medical students and preliminary residents currently applying for the Match. Survey items questioned respondents regarding their current position at MUSC, self-ranked importance of a global health/surgery-focused career path, whether they had ever participated in global health/surgery related efforts, if they had been provided the opportunity to do so, and how well they believe Global Health/Surgery efforts are represented at MUSC.

Results: 85 individuals completed the survey, representing 93% medical students and 7% preliminary residents. Of the respondents, 18.8% of respondents ranked a global health/surgery option a (3/5) importance, and 21.1% ranked a global health/surgery option as a (4/5) or (5/5) importance. Of respondents, 66% said they had never participated in any global health/surgery related efforts at MUSC (Figure 1), but 74% replied they would have been interested in pursuing global health/surgery-focused curriculums had they been given the opportunity (Figure 2). 88% of respondents ranked global health/surgery representation at MUSC a (3/5) and below, 18.8% of respondents ranked global health/surgery representation at MUSC as very poor (1/5), while 32.9% of respondents ranked global health/surgery representation at MUSC as poor (2/5).

Conclusion: There is strong interest for the MUSC ACCESS program which will provide students, residents, and faculty with invaluable knowledge in healthcare delivery to low-resource and international settings. Additionally, 1 in 5 graduating medical students place significant importance on global health/surgery option availability when considering their rank lists, emphasizing the need for residency programs to engage in Global Health/Surgery. Further study is needed to understand nationally generalizable data on graduating medical student and preliminary resident attitudes towards international medicine and surgery.

Learning Objective(s)

1. Describe the impact of an ACCESS program on medical student & resident education in global health disparities
2. Demonstrate the value of a trainee-led/focused Global Health curriculum for education in low-resource setting care delivery
3. Identify ways that the ACCESS program can better prepare medical trainees to become leaders in Global Healthcare Delivery

Upon completion of this lecture, learners should be better prepared to understand the necessity of a Global Health/Surgery focused curriculum for trainees, by trainees in building a new generation of pioneers in Global Healthcare Delivery to Low-Resource Settings.

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Can Inhibiting Ferroptosis and Subsequent Endothelial Glycocalyx Shedding Reduce the Morbidity and Mortality of Hemorrhagic Shock

Category: Surgery & Surgery Subspecialties

Disclosure: The authors did not report any financial relationships or conflicts of interest.

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Background/Purpose

Trauma is the leading cause of death in people under 44 years old. Hemorrhagic shock (HS) is often a consequence of trauma and contributes to morbidity and mortality in these patients. Shock-induced endotheliopathy has garnered interest recently and one aspect of this, endothelial glycocalyx shedding (EGX), has shown to promote coagulopathy following hemorrhage. Ferroptosis is an iron dependent, non-apoptotic form of controlled cell death triggered by the oxidation of membrane phospholipids. Liproxstatin-1 is an inhibitor of this

process and can protect against oxidative damage to the endothelial cell membrane and subsequent shedding of glycocalyx.

Goals

To determine if Liproxstatin-1, a ferroptosis inhibitor can reduce glycocalyx shedding in hemorrhaged rats providing evidence of its therapeutic value in the setting of hemorrhagic shock.

Methods/Design

A rat model of hemorrhagic shock and resuscitation was used to assess glycocalyx disruption in the lungs via fluorescent-labeled wheat germ agglutinin staining in frozen tissue and by syndecan-1 ELISA on plasma samples. A control group (n=5) resuscitated only with Lactated Ringer's solution, following hemorrhage and resuscitation (H/R) was compared against an experimental group (n=1) that received Liproxstatin-1 following hemorrhage and before resuscitation.

Results/Findings

Glycocalyx shedding (assessed by an increase in plasma syndecan-1 levels) was significantly lower in the Liproxstatin-1 treated group compared to control group. Additionally, Liproxstatin-1 treated animals were able to sustain a higher mean arterial pressure (MAP), and oxygen saturation throughout the resuscitation period measured at 15- and 30-minutes following Liproxstatin-1 infusion.

Conclusions/Implication

Ferroptosis inhibitor Liproxstatin-1 can reduce morbidity acutely during hemorrhagic shock and protect endothelial cell membrane from oxidative damage due to its ability to slow the generation of reactive oxygen species (ROS) and lipid hydroperoxides.

Further experiments will be performed to complete the Liproxstatin-1 experimental group (n=5) as well as a control group using Cyrene (n=5), a DMSO-like solvent used to dissolve Liproxstatin-1 for intravenous administration. Additionally, tissue staining of lung vasculature will be performed to evaluate the glycocalyx disruption in the vascular beds of the lungs in the Cyrene, and Liproxstatin-1 groups as well as a group resuscitated with Lactated Ringers solution (H/R) alone.

Learning Objective(s)

1. Understand the role of Liproxstatin-1, a ferroptosis inhibitor in preventing cell damage/death in-vivo.
2. Understand the mechanisms driving coagulopathy following hemorrhagic shock.
3. Understand the relationship of succinate and vascular endothelial damage driving morbidity and mortality of hemorrhagic shock and subsequent coagulopathy.

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Remote Monitoring of Patients with Congestive Heart Failure in Rural Areas Reduces Admissions Over Time

Category: Quality Health Care, Patient Safety & Best Practices

Disclosure: The authors did not report any financial relationships or conflicts of interest.

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Background

Congestive heart failure (CHF) is one of the most common and expensive chronic diseases in the US. Prior studies in CHF remote patient monitoring (RPM) have demonstrated decreased mortality and hospital readmissions. However, studies have not investigated CHF RPM in rural Healthcare Professional Shortage Areas (HPSAs) and the impact of various socioeconomic factors on patient outcomes. This study aims to show that a simplified monitoring program can reduce CHF admissions in rural areas.

Methods

Patients were enrolled from various clinics and data were collected including age, sex, race, highest education level, insurance type, home address, EF, eGFR, the number of guideline-directed medical therapy (GDMT) medications prescribed, diuretic use, weight, and admissions 3 months before enrollment. The RPM team consisting of nurses called patients weekly to record compliance with monitoring, weight, and symptoms. Increases in weight or symptoms prompted urgent evaluation. The primary outcome was the number of all-cause and CHF admissions after enrollment, and the secondary outcome was patient weight.

Results

47 patients were analyzed and resided in 14 counties with 91% of HPSAs designated as “rural.” Mean age was 61.2 years; 18 were female and 29 were male. 19 patients were black and 28 were white. Mean EF was 31% and mean compliance was 83%. The group accounted for 47 all-cause admissions and 25 CHF admissions in the 3 months before monitoring which fell to 15 all-cause and 4 CHF admissions 3 months after. Mean weight decreased from 213.9 to 207.0 pounds ($p=0.01$) with significant differences in weight reduction for race ($p=0.04$), patients living <20 miles from WTH ($p=0.03$), diuretic use ($p=0.04$), and different GDMT ($p=0.02$).

Conclusion

The results show a promising reduction in admissions in monitored patients, and 72% of patients saw a weight reduction at 3 months. Mean compliance was high at 83% as our study shifted the burden away from patients by employing a nursing team that actively called patients. This study is limited by a small sample size and duration, but patients are continuously enrolled and monitored to increase power. Overall, RPM in rural settings may reduce CHF admissions and improve patient outcomes.

Learning Objective(s)

1. Identify a need for remote patient monitoring in rural hospital systems to increase healthcare access
2. Implement a heart failure remote monitoring program to reduce admissions and improve outcomes

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Solitary Scalp Metastasis – A Rare Presentation of Hepatocellular Carcinoma

Category: Medicine & Medical Subspecialties

Disclosure: The authors did not report any financial relationships or conflicts of interest.

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Introduction:

About 30,000 people in the US are diagnosed with hepatocellular carcinoma (HCC) every year (1). The most common sites of metastasis for hepatocellular carcinoma are the lungs, lymph nodes and bones. However, because of the rarity of the presentation, the differential for firm scalp lesions often does not include metastatic disease from solid tumors (2). We are reporting on a 76-year-old male who presented with a painless scalp solitary lump, which was found to be a metastatic deposit of HCC.

Case Presentation:

A 56-year-old male presented with a lump on the vertex of his skull which had grown quickly to the size of a quarter in the last month. He had no history of trauma or injury and came to the emergency department because of mild intermittent tenderness and mild blurred vision in the mornings. He denied headaches, nausea or vomiting and denied any local itching, drainage, or bleeding. Examination revealed, a well localized, oval-shaped, non-tender, approximately 5 cm swelling, eccentrically posterior, and to the left from midline, that appeared dark in color with rough surface and firm consistency. No bleeding or drainage was noted. His examination was otherwise unremarkable with no stigmata of chronic liver disease and no focal neurological signs. Laboratory testing was not remarkable.

Computed Tomography (CT) of the head revealed a lytic, calvarial mass at the vertex with intracranial and extracranial extension concerning for malignancy with no meningeal penetration.

The patient tested positive for hepatitis C. However, alpha-fetoprotein was not elevated and there was no laboratory evidence of hepatitis B infection.

Final diagnosis:

Core biopsy of the lesion was consistent with metastatic HCC, which was confirmed by immunohistochemical analysis. Further imaging revealed nodular liver with mass in the posterior segment of right hepatic lobe measuring 3.8 x 3.7 cm. MRI was not available for the patient because of retained foreign bodies.

Management/Follow-up:

Management with Cyber-Knife SBRT to the calvarial lesion with radioembolization of the right hepatic artery was applied. The patient also underwent systemic therapy bevacizumab and atezolizumab followed by Lenvatinib. He subsequently had progression and was transitioned to hospice.

Learning Objective(s)

1. When observing skin lesions, it is important to keep metastatic disease on the differential, emphasizing the need for a thorough history and physical examination.
2. HCC is the only solid tumor cancer which does not require biopsy if liver imaging criteria are diagnostic. Rare presentation requires multidisciplinary approach and tissue diagnosis.

References and Resources

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Poster Abstract Presentations

Refractory Hypertension and Hypokalemia in the Setting of Licorice Consumption

Category: Medicine & Medical Subspecialties

Disclosure: The authors did not report any financial relationships or conflicts of interest.

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Coauthors: M. Colleen Hastings, MD, Professor, Nephrology, The University of Tennessee Health Science Center, Memphis, TN; Michelle McAmis, MD, Assistant Professor, Medicine, The University of Tennessee Health Science Center, Memphis, TN

Introduction: Secondary hypertension affects 5-10% of the hypertensive population, with hyperaldosteronism as the most common cause. Excessive aldosterone activity results in sodium reabsorption and potassium excretion, resulting in hypertension, hypokalemia, and suppressed renin.

Case Presentation: A 46-year-old hypertensive male was evaluated at his primary care clinic for dizziness and worsening hypertension. Blood pressure had been previously well controlled on lisinopril 10 mg daily. He was hypertensive (191/97) and bradycardic to 40 beats per minute. Physical exam was unremarkable except for bradycardia. EKG demonstrated sinus bradycardia with borderline QTc prolongation at 457. Serum potassium was 2.6 mmol/L. Amlodipine 10 mg daily and potassium chloride 40 mEq daily were added. One week later, he remained hypertensive and repeat labs revealed persistent hypokalemia (2.9 mmol/L). Lisinopril was increased to 40 mg daily and potassium chloride to 40 mEq twice daily. Repeated lab work demonstrated continued hypokalemia despite supplementation. Renal ultrasound, echocardiogram, stress test, serum creatinine, and urine microalbumin/creatinine ratio were normal. He was referred to Nephrology for evaluation. In the Nephrology clinic, aldosterone was <3.0 ng/dL and renin was 3.2 ng/mL/hr. At primary care follow-up, the patient revealed that he had been eating a 6-oz box of sugar-coated black licorice candy (Good & Plenty) daily for the past several months.

Working diagnosis: Glycyrrhizin, a compound found in licorice that inhibits cortisol deactivation in the kidneys causing excessive build-up of cortisol and stimulation of the renal mineralocorticoid receptors, may cause a syndrome of apparent mineralocorticoid excess, which is characterized by clinical findings of hypertension, hypokalemia, and suppressed aldosterone.

Outcome/Follow-up: Licorice consumption and potassium supplementation were discontinued. One week later, hypokalemia had resolved. At subsequent visits, antihypertensive agents were de-escalated due to improved blood pressure. This case adds to the growing body of literature illustrating the association between licorice consumption and hypertension and serves as a salient reminder to review dietary practices as part of a thorough clinical history.

Student-led Guidance for Diabetic Management in an Underserved Population

Category: Public Health & Environmental Medicine

Disclosure: The authors did not report any financial relationships or conflicts of interest.

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Purpose of the Study:

Our project implements a medical student supported management program for underserved diabetic patients in South Carolina. Trained medical students are paired with uninsured patients through a local free medical clinic to help educate, identify barriers to diabetic management, and set lifestyle goals.

Statement of Methods:

Adults (≥ 18 years old) with type 2 diabetes (T2D), an HbA1c $\geq 7\%$, and access to a phone are eligible for enrollment. Baseline A1c and BMI are taken at the time of enrollment. A1c and BMI are trended every 3 months to evaluate effectiveness. Individualized one-on-one regularly scheduled phone calls between the students and patients aims to identify obstacles typically unrecognized in the clinical setting. Our program connects with the patient during their daily routine in their home environment, providing insight on specific obstacles such as access to kitchen supplies and exercise equipment.

Summary of Results:

Currently, 31 patients have been enrolled with a baseline A1c value of 10.35% and an average BMI of 35.86. A total of 9 patients have completed a 3 month A1c check with an average decrease in A1c of 1.47% and a total of 5 patients have completed a 6 month A1c check with an

average decrease in A1c of 0.74%. Along with change in A1c, specific barriers were identified via phone call appointments. These included food insecurity, transportation, mental health, disability, housing security, ability to exercise, financial insecurity, trouble sleeping, and others. We have found that even with the available resources, our patient population often lacks the availability of free time to implement their management strategies.

Conclusions and Implications for Future Research:

Through identifying these barriers, our goal is to create a targeted follow-up plan to lower A1c values. This individualized one-on-one care model may be a more effective resource in managing diabetes in underserved populations.

Learning Objective(s)

1. Demonstrate the advantages & strengths of utilizing a model incorporating medical students into diabetic management in an underserved population.

References and Resources

N/A

Necrobiotic Xanthogranuloma Associated with Uveitis, Retinal Vasculitis, and Autoimmune Retinopathy

Category: Surgery & Surgery Subspecialties

Disclosure: The authors did not report any financial relationships or conflicts of interest.

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Introduction: Necrobiotic xanthogranuloma (NXG) is a rare and chronic non-Langerhans histiocytic granulomatous disease typically affecting the orbital adnexa and rarely the eye. We report the first case of NXG associated with uveitis, retinal vasculitis, and presumed autoimmune retinopathy (AIR).

Case Presentation: A 58-year-old female with a history of monoclonal gammopathy initially presented with uveitis of the right eye and was treated with topical steroids. She began to experience bilateral vision loss and eye pain, with progressive dyschromatopsia and the development of a left afferent pupillary defect. Workup revealed biopsy-proven NXG presenting as a left orbital mass. Electroretinogram showed diffuse cone-rod dysfunction with an electronegative B-wave. Fluorescein angiography revealed diffuse retinal vasculitis.

Final Diagnosis: Necrobiotic xanthogranuloma (NXG)

Management: Retinal Vasculitis was treated with rituximab. Intravenous immunoglobulin was eventually initiated due to concerns for the development of AIR. She was also referred to radiation oncology for radiotherapy for potential optic nerve compression. The patient is receiving close follow-up.

Learning Objective(s)

1. Upon completion of this lecture, learners should be better prepared to describe the ocular manifestation of Necrobiotic xanthogranuloma (NXG), especially as it relates to uveitis, retinal vasculitis and autoimmune retinopathy.

References and Resources

N/A

Chorea-Is Diabetes Mellitus to Blame

Category: Medicine & Medical Subspecialties

Disclosure: The authors did not report any financial relationships or conflicts of interest.

Presenting Author: Tina Phan, MD, Internal Medicine-Pediatrics, PGY-3

Introduction

Diabetic striatopathy (DS) is an underdiagnosed complication of diabetes characterized by acute hyperkinetic movements and reversible striatal abnormalities on neuroimaging. DS has a prevalence of 1 in 100,000 and is more common in type II diabetes, elderly patients, females, and individuals of Asian descent. While the pathology of DS is poorly understood, management primarily focuses on optimizing glycemic control and may involve the use of dopamine antagonists, vesicular monoamine transporter 2 inhibitors, or gamma-aminobutyric acid agonists.

Case Presentation

A 61-year-old male with poorly controlled type II diabetes, hepatitis C, and cocaine use presented with one week of continuous, involuntary movements affecting his entire body, including the face. Although speech remained unaffected, he experienced difficulties with ambulation and feeding himself.

On examination, high-amplitude, ballistic movements were observed in the upper extremities, predominantly worse on the right side. Strength was 4/5 bilaterally with 1+ and symmetric deep tendon reflexes. In the lower extremities, he had low-amplitude, irregular choreiform movements with normal strength and reflexes. Tardive dyskinesia was noted with repetitive

chewing motions, tongue protrusion, and lip pursing. Symptoms subsided with sleep and resumed upon awakening. Athetosis resulted in observed dysmetria during coordination testing. Gait was unsteady, while speech, cranial nerves, and sensation were intact.

Labs were significant for elevated liver enzymes, non-ketotic hyperglycemia, elevated CPK, and amphetamines on UDS. HgbA1c was 14%. Head CT showed bilateral basal ganglia calcifications and old lacunar infarcts. Brain MRI showed hyperintense lesions in bilateral striatum.

Diagnosis

We considered metabolic, infectious, inflammatory, drug ingestion, autoimmune, structural, and neurodegenerative etiologies. DS is rare, and the diagnosis is made clinically. There can be various hyperkinetic movements with hemiballismus-hemichorea being the most common manifestation, often accompanied by hyperintensity in the contralateral striatum. In patients with poorly controlled diabetes, DS should be considered in the differential diagnosis.

Management

The prognosis is generally excellent, and anti-chorea medications can be utilized for those unresponsive to tighter glycemic control. The recovery period can range from days to weeks. This patient had improvement with diabetes management, haloperidol, and clonazepam. At discharge, he had very mild uncontrolled facial twitching.

Learning Objective(s)

Upon completion of this lecture, learners should be better prepared to:

1. Identify diabetic striatopathy as a complication of diabetes mellitus.
2. Describe physical exam findings and hyperkinetic movements associated with this pathology.
3. Discuss management and treatment options.

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Posterior Cruciate Ligament Reconstruction with Suture Tape Augmentation: A Scoping Review

Category: Surgery & Surgery Subspecialties

Disclosure: The authors did not report any financial relationships or conflicts of interest.

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Introduction: The posterior cruciate ligament (PCL) accounts for up to 20% of ligament injuries around the knee. Suture tape augmentation (STA) for PCL reconstruction (PCLR) is a novel concept to increase graft strength and prevent elongation. The purpose of this study is to conduct a scoping review assessing the evidence to support or oppose the use of PCLR with internal bracing in clinical practice.

Methods: A systematic search of three databases was performed following the PRISMA guidelines and was completed April 2023 to identify studies related to PCLR+STA. Surgical technique, animal, biomechanical, and clinical studies were included for review. Studies including revision surgery or PCL repairs were excluded.

Results: A total of 380 articles were identified in the search, 6 of which met inclusion criteria, including 1 technique, 3 biomechanical, and 2 clinical studies. Biomechanical studies showed significant reduction in PTT with PCLR+STA in multiple studies ($p=0.047$, $p<0.05$). STA was found to decrease total elongation by 45% ($p=0.077$) and 58% ($p=0.018$) in PCLR groups differing on tibial fixation of the graft complex (Adjustable loop device vs screw respectively); increased load to failure ($p<0.012$) was seen with STA compared to PCLR alone as well. Clinical studies showed no significant differences in patient reported outcome scores between PCLR+STA and PCLR alone, except for a decrease in Visual Analog Scale pain scores at rest in the STA group in one study ($p=0.047$). Another study showed significant increases in postoperative IKDC (84.52 ± 6.42 , $p<0.05$), Lysholm (85.68 ± 4.99 , $p<0.05$), and Tegner (6.71 ± 1.83 , $p<0.05$) scores compared to preoperative scores along with normal range of motion and return to normal exercise in 93.5% of patients. There was no significant difference in complication rate between PCLR+STA and PCLR alone ($p=0.232$).

Conclusions: To our knowledge, this is the first review summarizing the literature regarding PCLR+STA. Biomechanical studies offer evidence showing beneficial load-sharing properties of increased graft strength and decreased elongation with STA. Clinical studies showed improved or equivalent outcomes to standard PCLR with no difference in complication rate. Larger sample sizes and longer-term data is necessary to understand the clinical benefit of STA of PCLR.

Learning Objective(s)

1. describe the current evidence that exists regarding suture tape augmentation for PCLR
2. identify the current gaps in the literature regarding suture tape augmentation of PCLR

References and Resources

N/A

**Strenuous Cough Causing Bilateral Rectus Sheath Hematoma
Secondary to Warfarin Coagulopathy**

Category: Medicine & Medical Subspecialties

Disclosure: The authors did not report any financial relationships or conflicts of interest.

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Introduction:

Rectus sheath hematoma is a rare but important cause of abdominal pain. It should be always on the differential when patients present with acute abdominal pain. It typically occurs after bouts of coughing, but it is usually unilateral on presentation. It is a known complication of anticoagulation therapy and combined with the patient’s initial presentation, it can be a source of potential morbidity and mortality. Here we present a rare case of bilateral rectus sheath hematoma secondary to Warfarin coagulopathy.

Case presentation:

An 81-year-old male with a PMH of A-fib on Warfarin, HTN, HLD, DM2, bilateral carotid artery stenosis and CAD s/p bypass surgery presented to the hospital with complaints of abdominal pain. The abdominal pain has been present for the past week and had associated loss of appetite. He had presented to the emergency department one day prior with similar complaints of weakness, abdominal pain and coughing that started that same day. At that time, he tested positive for Influenza A and abdomen/pelvis CT was not showing any acute findings to correlate his abdominal pain. He was then discharged home on antibiotics after being diagnosed with pneumonia 2/2 Influenza A infection. He then returned to the ED the next day with complaints

of worsening rib pain. On physical exam, he was hypotensive and tachycardic, but was otherwise normal. Labs also demonstrated acute anemia with a hemoglobin drop from 13.4 to 10.4, points. INR showed supratherapeutic levels at 7.7. Repeat CT of the abdomen at that time demonstrated a bilateral rectus sheath hematoma with active extravasation. All the findings together suggested acute blood loss anemia due to findings on CT scan.

Final diagnosis:

Bilateral rectus sheath hematoma with active extravasation and acute blood loss anemia secondary to Warfarin coagulopathy

Management/Follow-up:

Interventional Radiology was consulted and the patient underwent bilateral inferior epigastric artery embolization that same day. He also received Prothrombin complex concentrate and vitamin K for reversal of warfarin. INR eventually went down to 0.97. His hemoglobin and INR were monitored closely in the hospital for several days until normalization.

Learning Objective(s)

1. Identify the life-threatening causes of acute abdominal pain when patients present to the Emergency Department.
2. Discuss in detail with the patient the past medical history, medications and recent surgeries they have had.
3. Diagnose rectus sheath hematoma in a patient that presents with acute abdominal pain

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Masked Ovarian Torsion: A Case Report

Category: Quality Health Care, Patient Safety & Best Practices

Disclosure: The authors did not report any financial relationships or conflicts of interest.

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Introduction:

Acute, unilateral abdominal pain with nausea comes with a large differential in women. While kidney stones are one of the most common reasons for an emergency department visit with these symptoms, it is vital that healthcare providers do not allow themselves to become anchored to such an initial diagnosis. Further evaluation to consolidate that diagnosis in an emergency department setting may entail ultrasound, which has sensitivity for other possible causes of abdominal pain, and consulting OB/GYNs on call.

Case Presentation:

We present the case of a 38-year-old female who presented with worsening abdominal pain and nausea after recent treatment for nephrolithiasis. Imaging and further evaluation of her symptoms suggested the cause was a complex adnexal mass that had been noted when she was diagnosed with kidney stones via non-contrast CT. She had been discharged without further evaluation of the mass at her previous visit and recommended to follow up with OB/GYN. CT imaging obtained at this visit suggested the adnexal mass had ruptured.

Final Diagnosis:

The mass was determined to be a multiloculated cyst that served as a nidus for ovarian torsion.

Outcome:

Through surgical intervention, the patient was restored to baseline. Pathology determined that the cystic mass was benign. This case highlights the importance of establishing a broad differential and exploring all findings. Ovarian masses are prevalent and carry risk for malignancy, rupture, and torsion. The use of ultrasound to further evaluate masses in the ED setting may produce better patient outcomes, reducing the time burden on healthcare workers and the financial burden on patients. Additionally, we acknowledge the need to approach patients with a wide differential, including OB/GYN conditions in what seems to be a clearcut medicine case.

Learning Objective(s)

1. Generate a more comprehensive differential for lower abdominal pain in female patients.
2. Discern advantages and disadvantages between CT and U/S for investigating lower abdominal pain.
3. Evaluate an adnexal mass.

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Comparing Bacterial Presence with the Usage of 0.05% Chlorhexidine Gluconate (CHG) Lavage During Urologic Prosthesis Revision Surgery

Category: Quality Health Care, Patient Safety & Best Practices

Disclosure: The authors did not report any financial relationships or conflicts of interest.

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Background

An Inflatable Penile Prosthesis (IPP) is the most common penile implant used to treat Erectile dysfunction (ED), Peyronie's disease, and other penile deformities in the USA. IPP uses a fluid-filled reservoir with a pump and valve system to activate inflation and deflation. Although penile implants achieve the highest success rates in ED treatment, the possible presence of bacteria on the device itself or bacteria exposure accumulated during the surgery increases the risk of progression into biofilm or infection. Biofilm complicates the bacteria eradication effort and can ultimately jeopardize the implant. Often, the only way to treat the post-op infection is

with implant removal. Currently, many preventative measures, such as different perioperative irrigations, are being studied to reduce the number of penile implant infections. Research has shown that irrigation at the time of both infectious and noninfectious surgery lowers subsequent infection rates. Different solutions like saline, antibiotic, betadine, and hydrogen peroxide solutions have been considered. Recently, orthopedic literature has shown that 0.05% Chlorhexidine Gluconate (CHG) lavage has effectively reduced biofilm in artificial joint procedures.

Design

We aimed to investigate a series of patients who underwent revision IPP surgery while utilizing FDA-approved CHG lavage for irrigation and compared the bacterial presence before and after CHG washout. Additionally, Next Generation Sequencing (NGS), a DNA sequencing technology, was used to further identify the pathogens involved.

Findings

Between 2021 to 2023, 48 patients underwent IPP revision surgery for either infectious or noninfectious reasons. During the operation, a section of the capsule tissue surrounding the implanted IPP pump was first taken and sent for cultures. NGS studies were also sent out. After the implant removal, all implant spaces were irrigated and washed out with CHG (two 450-mL bottles). A second tissue culture was then obtained post washout. Of the 48 patients, there were 4 positive bacterial cultures before washout and 13 positive NGS results. Results of the post CHG washout cultures were all negative.

Conclusion

It appears that irrigation with 0.05% Chlorhexidine Gluconate solution is an effective antiseptic that can decrease bacterial presence, and hopefully reduce IPP infections.

Learning Objective(s)

1. Describe the current thought in prevention of prosthetic infections.
2. Identify what types of irrigations have been used to reduce implant infections.
3. How bacterial presence was measured quantitatively in this experiment.

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A Single-Center Retrospective Study of the Association Between Metformin Use and Uveal Melanoma

Category: Surgery & Surgery Subspecialties

Disclosure: The authors did not report any financial relationships or conflicts of interest.

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Background:

Uveal melanoma (UM) is the most common intraocular malignancy in adults. Nearly 50% of patients develop metastasis within 5-10 years, the majority of whom die within 1 year of diagnosis. Despite advancements in cancer therapies for other malignancies, survival rates in UM have not changed over the last half-century. Thus, there is an urgent need for effective agents against UM. Metformin, a widely used oral hypoglycemic agent, has shown potential anticancer properties in various malignancies through its ability to inhibit the mammalian target of rapamycin (mTOR) pathway and modulate cellular metabolism. However, the association between metformin use and UM outcomes remains poorly understood.

Goals:

To analyze the relationship between metformin use and the development of UM metastasis, time between diagnosis and metastasis, and death from metastasis.

Methods:

Demographic and clinical data were extracted from a retrospective cohort of 218 patients diagnosed with UM at a tertiary academic medical center from January 2007 to October 2022. Metformin use was assessed, and associations with UM outcomes were analyzed. Sub-stratification based on tumor size, gene expression profiling class, and diabetes status was also performed. Multivariable regression analysis was conducted to assess independent associations.

Results:

Among the 218 patients, 129 were male (59.2%), 185 (84.9%) were white, 39 (17.9%) had diabetes, and 32 (14.7%) received metformin. Male patients had a significantly higher rate of metformin use compared to females (78.1% vs. 21.9%, $p=0.02$). Overall, metformin use showed no significant association with UM metastasis, time between diagnosis and metastasis, or death from metastasis ($p=0.585$, $p=0.727$, $p=0.691$, respectively). These findings remained consistent across sub-stratification and multivariable regression analyses.

Conclusions:

In this retrospective study, we found no evidence supporting an association between metformin use and UM outcomes. Given our limited dataset, further investigation is necessary to explore metformin's potential in UM and to elucidate the underlying mechanisms for its action. These findings contribute to the growing body of knowledge regarding UM treatment and highlight the need for future studies to validate these results and explore alternative therapeutic strategies.

Learning Objective(s)

1. Understand the current landscape of uveal melanoma (UM) and the urgent need for effective treatment options: Gain knowledge about the prevalence of UM, its metastatic potential, and the limited progress in improving survival rates over the years.
2. Evaluate the potential role of metformin in UM outcomes: Assess the existing evidence on the association between metformin use and UM outcomes, including the development of metastasis, time between diagnosis and metastasis, and death from metastasis.

References and Resources

N/A

Necrotizing Pancreatitis As A Complication of HELLP Syndrome

Category: Women's & Children's Health

Disclosure: The authors did not report any financial relationships or conflicts of interest.

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Introduction

Hemolysis, elevated liver enzymes, and low platelets characterize HELLP syndrome. It is one of the most severe manifestations of preeclampsia and is associated with higher maternal

mortality. Pancreatitis, although rare in pregnancy, is usually associated with cholelithiasis. Here, we present a rare case of pancreatitis seen as a sequelae of HELLP syndrome.

Case Presentation

31 YOF G1P0 with significant past medical history of Hashimoto's thyroiditis, history of Lyme disease, and migraines presented to triage at 36w3d gestational age complaining of cough, vomiting and abdominal pain. After arrival, she had severe range blood pressures and complained of worsening abdominal pain. Fetal heart rate tracing was remarkable for fetal bradycardia. Therefore, she underwent an emergent primary low transverse cesarean section. She met criteria for HELLP syndrome based on evidence of hemolysis (LDH 568, haptoglobin <10, prothrombin 9.5, INR 0.81), transaminitis (AST 237 and ALT 101) and elevated blood pressures (140-164 mmHg/79-112 mmHg). She was started on magnesium sulfate for seizure prophylaxis. Postoperative course was complicated by respiratory failure, persistent hyperglycemia, and elevated amylase/lipase. On POD 7, CT of abdomen and pelvis were ordered due to worsening lab abnormalities. CT demonstrated necrotizing pancreatitis with complete replacement of normal pancreatic parenchyma with fluid.

Final Diagnosis: Necrotizing pancreatitis in the setting of HELLP syndrome

Management/Follow Up

Necrotizing pancreatitis was initially managed with antibiotics and insulin for persistent hyperglycemia. She had multiple hospital readmissions for abdominal pain and hyperglycemia. CT scan on POD 39 was notable for persistent necrotizing pancreatitis with possible abscess versus pseudocyst formation. Patient is currently followed by endocrinology with strict glucose control and monitoring of abscess versus pseudocyst with serial CT scans.

Discussion:

Limited case studies are available discussing necrotizing pancreatitis as a sequelae of HELLP syndrome (1,2). Microvascular abnormalities and aberrant immune responses are thought to play a role in the development of HELLP syndrome. Another explanation for the development of necrotizing pancreatitis could be microvascular damage resulting in pancreatic ischemia. Lastly, it can also be due to exaggerated immune response resulting in cytokine-induced pancreatic damage in the setting of a known autoimmune disorder.

Learning Objective(s)

1. Described serious complications of HELLP syndrome

References and Resources

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