Department of Internal Medicine
TTUHSC - El Paso

GRAND ROUNDS
E. P. C. M. S.

TITLE: TREATMENT OF HYponATREMIA

Speaker: Azikwe Nwosu, MD, Associate Professor of Internal Medicine, Chief, Division of Nephrology, Department of Internal Medicine, Texas Tech University Health Sciences Center, El Paso

Introduction: Hyponatremia is the most common electrolyte disorder. It is seen in both acute and chronic disease and especially in hospitalized patients. Although treatment of hyponatremia may be life-saving, the iatrogenic consequences of overly aggressive treatment can be devastating. This lends to uncertainty, if not fear, over when to and how to treat hyponatremia.

Objectives:
- Recognize when not to treat hyponatremia
- Discuss adverse outcomes in treating hyponatremia

Discussion: The first step in managing hyponatremia is to determine if true hypo-osmolality exists. Hyponatremia does not require treatment in pseudo hyponatremia due to hyperproteinemic and severe hypertriglyceridemia states where osmolality is truly normal, in isotonic or even hypertonic status with hyponatremia as seen with severe hyperglycemia, mannitol, or contrast media, or with renal osmostat when the normal range of serum osmolality has been reset downwards, e.g., 260-280 mosm. These patients are asymptomatic and serum sodium often ranges between 125-130 meq/L. Correct, safe treatment of hyponatremia involves determination of 3 things: 1. Symptomatic versus asymptomatic presentation. 2. Acute versus chronic duration (i.e., less or greater than 48 hours). 3. Volume status as judged clinically to be hypovolemic, euvolemic, or hypervolemic. Acute severe hyponatremia can cause major neurologic injury due to cerebral edema and must be treated promptly. If hypovolemic, intravenous saline should be given, mainly as normal saline but hypertonic saline may initially be given as well. Diuretics and vasopressin receptor antagonists (vaptans) are not indicated. Euvolemic or hypervolemic acute severe hyponatremia states should not be treated with normal saline but should receive hypertonic (3%) saline with IV loop diuretics (not thiazides). Chronic, severe, symptomatic hyponatremia should be corrected fairly rapidly initially; rate of 1ml/kg/hour of IV 3% saline for first few hours. This should result in about 1 mmol/kg/hour increase in serum sodium. Frequent checking of serum sodium needed initially e.g. 2-3 hourly. IV furosemide often added in hypervolemic patients (CHF, chronic kidney disease). Subsequently sodium and free H2O restrictions should follow. Vaptans may be used as well. Asymptomatic hyponatremia when severe (<120) is almost certainly chronic. These patients often have SIADH (euvolemic) and less often hypervolemic sodium and fluid restrictions is the main stay of treatment. Loop diuretics and vaptans are additional modalities.

Conclusions/take home points:
- Hyponatremia is usually mild and asymptomatic.
- Acute, severe, symptomatic hyponatremia should be treated promptly and rapidly to avoid severe neurologic consequences from cerebral edema with resultant mortality.
- Overly aggressive correction should be avoided in chronic hyponatremia especially in the absence of severe symptoms.
- Treatment is not indicated in the absence of hypo-osmolality or in onset osmostat.

TITLE: CARDIAC CONDUCTION BLOCK

Speaker: Zainul Abedin, MD, FHRS, Professor of Clinical Medicine, Department of Internal Medicine, TTUHSC, Paul L. Foster School of Medicine, El Paso, Texas

Introduction: Cardiac conduction system abnormalities present as tachycardias or bradycardias. Patients with these abnormalities are encountered in all the specialties of medicine. Familiarity with the clinical presentation, diagnosis, and treatment will facilitate effective management of these patients.

Objectives:
- Discuss the pathophysiology of the cardiac conduction system divided into four sections.
- Manage cardiac conduction blocks based on pathophysiology and best practices to ensure best patient outcomes.

Discussion: Cardiac conduction block can be divided into four anatomic sections for discussion of therapeutic approaches. 1. Sinus node: The most common presentation is sick sinus syndrome. Congenital sinus bradycardia due to mutation of various ion channels including HCN4 mutation, although uncommon, should be considered when the young healthy person presents with bradycardia. 2. Atrial conduction system: Abnormalities present with focal atrial tachycardia or reentrant atrial tachycardia such as atrial flutter. 3. AV node: Conduction abnormalities present...
as a prolonged PR interval, second-degree AV block, complete AV block, and paroxysmal AV block. 4. His-Purkinje system: Abnormalities here present as bundle branch block, aberrant conduction. Regarding the management of cardiac conduction blocks, asymptomatic congenital sinus bradycardia generally does not warrant pacemaker insertion. The use of recently approved ivabradine in the management of inappropriate sinus tachycardia is based on the slowing of the heart rate by this HCN4 channel blocker without other adverse reactions seen with beta blockers and calcium channel blockers. It is important to identify the specific type of paroxysmal AV block as the prognosis is poor for rate dependent or pause dependent paroxysmal AV block. However, the prognosis is excellent for vagal paroxysmal AV block. Knowledge of the pathophysiology and clinical presentation of complete heart block in inferior wall myocardial infarction as opposed to anterior wall myocardial infarction is essential for determining when to insert a permanent pacemaker and prognosis. Accurate diagnosis of aberrant conduction is essential to avoid mistaking a supraventricular tachycardia with aberrant conduction with ventricular tachycardia.

Conclusions/take home points
- Sinus node dysfunction is commonly due to sick sinus syndrome.
- Exit blocks and concealed conduction can be mistaken for AV block.
- Rate dependent and pause dependent paroxysmal AV block have a poor prognosis and are often associated with syncope and sudden cardiac death.
- The prognosis of AV block varies according to its location, e.g., an infraHisian block has a higher mortality than an AV nodal block.
- Aberrant conduction such as Ashman’s and rate dependent aberrancy should be distinguished from ventricular tachycardia because treatment and prognosis are quite different.

TITLE: THE ENDOSCOPIC SURGICAL INTERFACE
Speaker: Brian Davis, MD, Assistant Professor, Department of Surgery, Texas Tech University Health Sciences Center and Paul L. Foster School of Medicine, El Paso

Introduction: Emerging endoscopic technology will supplant current surgical therapy in many cases of gastrointestinal disease. Centers in Japan have pioneered endoscopic mucosal and submucosal resection of early gastric and esophageal cancers. Endoscopic stents are being deployed for adjunctive treatment of surgical complications, fistulas, and obstructing cancers requiring palliation.

Objectives:
- Discuss the emerging field of Natural Orifice Endoluminal Surgery (NOES)
- Describe Peroral Endoscopic Myotomy as a therapy for achalasia.
- Explain applications of endoscopic ultrasound for transmural drainage of pancreatic pseudocysts as well as to obtain pancreatic and biliary duct access.
- Describe the applications of endoscopic mucosal and submucosal resection for early cancers.
- Explain the application of self-expanding metallic stents to salvage surgical complications as well as providing endoscopic palliative therapy for obstructing cancers.

Discussion: Given the extensive advances in endoscopic technology, one can predict that natural orifice transluminal endoscopic procedures will supplant current surgical therapy in several areas to include the treatment of gallstone disease, complications of pancreatitis, and achalasia. Improved screening endoscopy for early detection of cancers will allow application of endoscopic mucosal and submucosal resection. Endoscopic self expanding metallic stents have been used to salvage post-operative anastomotic leaks and fistulas as well as providing a minimally invasive therapy for obstructing cancers.

Conclusions/take home points
- Advanced training in endoscopic ultrasound and ERCP techniques will be needed to develop and provide transluminal therapies in the near future.
- Endoscopic stents are an excellent alternative to re-operative therapy for surgical complications from failed gastrointestinal anastomoses.
- Self expanding metallic stents should be considered a first line therapy for palliation of gastrointestinal cancers.
- Gastrointestinal endoscopists working in close collaboration with surgeons can be expected to advance the efficacy and application of innovative techniques to treat gastrointestinal disease.

TITLE: INFORMED CONSENT—A PROCESS, NOT A PIECE OF PAPER
Speaker: Connie Crawford, JD, Assistant County Attorney, El Paso County Hospital District Legal Unit, University Medical Center of El Paso, El Paso

Introduction: Awareness of patient autonomy and the legal implications of the informed consent process are critical to the provision of safe and patient centered health care. Treatment without consent can constitute assault and battery. Careful attention to the communication process is vital.

Objectives:
- Describe types of health care to which a minor may or may not consent to.
- Identify Texas-specific requirements for informed consent.
- Explain who may consent on behalf of a patient who is incapacitated.
- Summarize the informed consent process during an emergency.

Discussion: The topics for this discussion included ethical, statu-
Conclusions/take home points

- Informed consent process is a non-delegable duty of the physician.
- Instructing patient/decision-maker of the risks designated by the Texas Medical Disclosure Panel provides significant legal protection against claims based on lack of informed consent.
- Hierarchy of surrogate decision-makers in Texas starts with the spouse.
- Consent by minors is limited but includes testing and treatment for reportable infectious, contagious or communicable diseases, and drug or chemical addiction/dependency.
- Involuntary treatment/testing, e.g., for DWI blood draws, may be done if specific criteria are met.

TITLE: DUTY RESTRICTIONS AND GRADUATE MEDICAL EDUCATION

Speakers: Ana L. Huerta, MD, and Ricardo A. Baltodano, MD, Chief Medical Residents, Department of Internal Medicine, Texas Tech University Health Sciences Center, Paul L. Foster School of Medicine, El Paso, Texas.

Introduction: Resident's supervision and duty hours have been a matter of public concern since the mid-1980s. In 2003, the Accreditation Council for Graduate Medical Education (ACGME) revised their Common Program Requirements to call for significant restrictions in resident duty hours. In 2007, the U.S. Congress charged the Institute of Medicine (IOM) with examining the relationship between duty hours and patient safety. Their report, released in December 2008, recommended further limitation of resident's work hours. It called for increased supervision, fatigue-mitigation strategies, facilitation of care transitions and increased federal oversight of the ACGME.

Objectives:

- Describe the duty hour restrictions recommended by the Institute of Medicine in 2008 that were in addition to the duty hour restrictions published by the ACGME in 2003 in response to public concern over excessive resident work hours.
- Describe the major restructuring of residency education required by these requirements.
- Review the impact on residency training as anticipated here at TTIUHSC.

Discussion: The IOM report reviewed ways Graduate Medical Education (GME) programs can best prevent harmful medical errors committed by sleep deprived residents. It recommended those residents' shifts longer than 16 hours should include an uninterrupted 5 hour sleep period. Subsequently, the ACGME Duty Hours Task Force concluded that such a long sleep period was unworkable and instead recommended "strategic napping" during long shifts. The revised guideline recommendations were approved and will take effect on July 1, 2011. Compliance is voluntary, but non-adherence would jeopardize hospitals' ability to sponsor GME programs and place at risk annual support form Medicare of about $100,000 per resident. The standards additionally emphasize the importance of faculty supervision and teaching, improvement of the patient handover process, and education of residents about ways of maintaining alertness while on duty.

Conclusions/take home points:

- Included in the ACGME guideline revisions that take effect on July 1, 2011 are requirements to:
  - Preserve an 80-hour limit on the resident workweek.
  - Limit all first-year residents' work to no more than 16 hours continuously.
  - Have in-house supervision available at all times.
- The standards also emphasize the importance of faculty supervision and teaching, improvement of patient-handover process and education of residents about ways of maintaining alertness while on duty.
- The two largest barriers to implementing the new recommendations are the cost and difficulty of finding an adequate number of other health professionals to do the work of the residents.
- National surveys have suggested the possibility that extending the length of the training period may be required, raising another potential cost issue.

TITLE: RESIDENCY RESEARCH GROUP 2 PRESENTATION: CRESCENTIC GLOMERULONEPHRITIS IN A HISPANIC POPULATION AT THE US-MEXICO BORDER: A 6 YEAR REVIEW OF A SINGLE CENTER RENAL BIOPSY DATABASE

Speakers: Members, Department of Internal Medicine Residency Training Program, Texas Tech University Health Sciences Center, El Paso (Group 2 members: Ricardo Baltodano, MD, PGY-3, Rodrigo Alfaro, MD, PGY-3, Luis Rodriguez, MD, PGY-3).

Introduction: The types of glomerular diseases affecting many ethnic groups have been extensively reviewed. Among these entities, crescentic glomerulonephritis is the most severe form of glomerular injury that produces a rapid deterioration of the renal function. Prompt diagnosis and therapy are needed. However, the types of glomerular disease affecting Hispanics per se have not been fully described. To address this, a retrospective review was performed. The charts of 129 Hispanic patients who underwent native renal biopsies between 1/2004 and 1/2009 at the University Medical Center of El Paso, Texas, were examined.

Objective: Describe the types of glomerular disease found in a Hispanic population at the US-Mexico border.

Discussion: Our chart review revealed the average age of the patient at the time of biopsy was 43 years; women (85%) had biopsies more frequently than men (15%). Secondary glomerular diseases were more common than primary glomerular disease (58%...
vs. 42% respectively). Among the primary glomerulopathies, focal segmental glomerulosclerosis (FSGS) was most common (32%), followed by membranous glomerulonephritis (GN) (19%). The most common secondary glomerulopathy was lupus nephritis (70%) followed by diabetic nephropathy (23%). The mean creatinine at the time of biopsy was 3.0 mg/dL, but it was been higher among those with primary glomerulopathies. Crescentic glomerulonephritis was found in only 7 (5.42%) of the 129 native renal biopsies reviewed. The most common immunopathologic category of crescentic glomerulonephritis was immune complex (58%), followed by pauci immune (42%). Among this subgroup the mean creatinine at presentation was 4.3 mg/dL; all patients presented with hematuria and 85% with nephrotic range proteinuria.

Conclusions/take home points

- In this series of biopsied Hispanic patients the main cause of glomerular disease was lupus nephritis.
- FSGS was the most common primary glomerulopathy.
- Crescentic glomerulonephritis is a relatively rare entity among Hispanics.
- The profile of glomerular disease in our population is similar to that described in other series.
- This report, although limited by a relatively small number of cases, contributes to our understanding of glomerular disease in a Hispanic population at the US-Mexico border.

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title: the medicine/psychiatry clerkship at plfsom

speaker: Vani Shukla, MD, Assistant Professor of Medicine, General Internal Medicine Division, C-Clerkship Director, Department of Internal Medicine, TTUHSC Paul L. Foster School of Medicine, El Paso, Texas

Introduction: The Paul L. Foster School of Medicine (PLFSOM) has a non-traditional curriculum that integrates basic sciences with clinical presentations in the first two years of the four year curriculum. The integration of various medical disciplines is accomplished in the clerkship or third year by combining clerkships into blocks and by following certain curricular threads throughout the clerkship year.

Objectives:
- Describe the PLFSOM curriculum for third year clerkship block rotations in Internal Medicine/Psychiatry, Family Medicine/Surgery, and OB-GYN/Pediatrics
- Identify common PLFSOM curricular threads that will be included as part of the Internal Medicine/Psychiatry (IM/Psych) Clerkship block
- Discuss shared topics in the IM/Psych Clerkship from an internal medicine perspective
- Describe the medical student rotation schedule in the IM/Psych block that includes a 2 week ambulatory selective rotation on medicine subspecialty services

Discussion: The Internal Medicine and Psychiatry clerkship is 16 weeks in duration. By the end of this combined rotation students will be able to evaluate patients with complex presentations of psychiatric and medical illness. The clerkship involves integration of psychiatry with medicine in didactic sessions as well as with

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shared clinical bedside teaching.

Conclusions/take home points
- The PLFSOM year three clerkships consist of three 16 week blocks formed by combining two clerkships in each block: Internal Medicine/Psychiatry, Family Medicine/Surgery, and OB-GYN/Pediatrics.
- The goal of combining the clerkships into blocks is to help students appreciate the close relationship of various medical conditions in different medical fields when evaluating and managing a patient.
- A specific goal of having the combination of Internal Medicine and Psychiatry is to help students appreciate the impact of behavioral conditions on the diagnosis and management of various medical conditions as well as the influence of illness on behavior.
- The Internal Medicine and Psychiatry block consists of a highly integrated clinical schedule and weekly didactic sessions.
- Students will have both inpatient and outpatient experiences During the Medicine/ Psychiatry Clerkship. The ambulatory Internal Medicine component will be a 2 week selective in internal medicine subspecialties of interest to the student.

an increase in health care cost, fractionated care, and an inability of the health care system to handle increased numbers of newly insured persons. To address a revision of the current payment system is needed to address the income differential between primary care providers and their specialist colleagues. In addition, a culture of undergraduate and graduate medicine that encourages primary care specialties as a viable option must be developed. Continued innovations in the medical school curriculum are required to maintain interest in primary care especially in the current climate.

Conclusions/take home points
- We have a moral obligation to produce a physician workforce that meets the needs of our communities.
- Institutional culture and policy making should be reassessed and made to align with the current needs of the US population.
- Continued involvement of physicians and medical student educators to advocate for the health of communities is needed in policy making.
- Adequate funding is vital to the education of medical students.

TITILE: MEDICAL STUDENT EDUCATION IN PRIMARY CARE
Speaker: Jennifer Molokwu, MD, MPH, Assistant Professor of Medicine, Department of Internal Medicine, TTUHSC Paul L. Foster School of Medicine, El Paso, Texas

Introduction: Over the last several decades the number of graduating medical students in the US choosing a career in primary care has continued to decline. This has led in part to a shortage of primary care physicians especially in rural and underserved areas of the country. Numerous studies including the December 2010 Council on Graduate Medical Education (COGME) Twentieth Report have shown that maintaining a healthy level of primary care physicians is necessary for efficient health care delivery and usually results in improved health outcomes. Imbalance in the practice environment (life work balance), a lack of focus of both graduate and undergraduate medical education on primary care, and increasing medical school debt have been identified as various factors that affect medical students choice of specialties.

Objectives:
- Discuss latest COGME report on Advancing Primary Care
- Describe innovations being used in medical student education which are designed to increase the number of primary care physicians.

Discussion: The COGME report identifies a shortage of primary care physicians in the US which is expected to worsen over time especially in rural areas. This will predictably lead to

TITILE: HIV/HCV: INTERSECTS AND PARALLELS
Speaker: Ogechika Alozie, MD, MPH, Assistant Professor of Medicine, Department of Internal Medicine, TTUHSC Paul L. Foster School of Medicine, El Paso, Texas

Introduction: Human Immunodeficiency Virus (HIV) and Hepatitis C Virus (HCV) are viruses that combined affect over 5 million persons living in the United States. Unfortunately, while the diagnosis and management of HIV infections have greatly benefited from a wealth of research and education, the diagnosis and management of HCV infection have suffered from a lack of both.

Objectives:
- Compare and Contrast HIV care and HCV care
- Discuss the future of HCV/HIV research at Texas Tech University Health Sciences Center and University Medical Center of El Paso

Discussion: New diagnostic and treatment modalities for HCV are mirroring those of HIV. They are beginning to offer the majority of individuals suffering from HCV an opportunity for complete cure, unlike strategies presently available for HIV.

Conclusions/take home points
- At Texas Tech, we are combing the expertise of specialists in both Gastroenterology and Infectious Diseases to create the first combined HIV/Hepatitis C Treatment Clinic.
- We plan to use this as an opportunity to treat El Pasoans infected with HCV.
- As we grow, this will also serve as a Center of Excellence for education and integrated health strategies.