So Basic!

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Learning Objective 1: Understand that Bulimia Nervosa can lead to severe electrolyte deficiencies and ultimately cardiac arrest.

Learning Objective 2: Recognize the importance of screening tools for eating disorders in the primary care setting.

Case: A 27-year-old woman presented with weakness, nausea, and vomiting for 4 weeks. Exam was significant for a thin female with pallor, dry mucous membranes, and erosion of her upper molars. She denied history of an eating disorder. While in the ER, she had a witnessed myoclonic seizure and was noted to have ventricular tachycardia. She was cardioverted to normal sinus rhythm and emergently intubated. A few minutes later, patient developed pulseless ventricular tachycardia; ACLS protocol was initiated. During this arrest, she had multiple arrhythmias, including torsades de pointes and ventricular bigeminy and eventually returned to a normal sinus rhythm. Initial labs revealed Na 109 mmol/L, K 2.1 mmol/L, Cl <50 mmol/L with arterial blood gas showing pH of 7.89, pCO2 32, and HCO3 61.3. Upon transfer to the ICU, she went into pulseless ventricular tachycardia again. After 16 minutes of resuscitation, including defibrillation a total of six times, the patient regained a pulse and was in normal sinus rhythm. A hydrochloric acid drip was started for her profound alkalosis. She also received intravenous drips of lidocaine, levophed, and hypertonic saline. A transthoracic echocardiogram showed an ejection fraction (EF) of 15% and apical ballooning consistent with a stress cardiomyopathy. By hospital day 3, she was extubated. She later admitted to a 2 year history of bulimia and alcohol abuse. After 8 days, she recovered and was discharged in stable condition with a psychiatric follow up. A repeat echocardiogram at discharge revealed a normal EF.

Discussion: Primary care physicians are well trained to screen and treat obesity; however, bulimia nervosa and eating disorders are infrequently recognized until patients present with severe complications. The estimated prevalence of bulimia nervosa is 3% to 10% of adolescent and college age women in the United States. Complications include electrolyte imbalances (e.g. hyponatremia, hypokalemia, and hypochloremic metabolic alkalosis), arrhythmias, and increased incidence of drug and alcohol abuse. From our literature review, this is the first case report of severe alkalosis with a pH 7.89 caused by bulimia. In severe alkalosis, intravenous infusion of dilute hydrochloric acid is indicated. In a recent meta-analysis of 12 studies, the mortality rate of bulimia is estimated to be 1.74 per 1,000 person-years, meaning 0.17% patients die. Early recognition and intervention may prevent this fatality. The SCOFF questionnaire as a screening tool has been shown to have 100% sensitivity and 87.5% specificity. Currently, there is no standard guideline for screening, and it is essential for primary care physicians to screen high risk patients.
The path of least resistance: A lesson in keeping a broad differential

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**Learning Objective 1:** Appreciate the growing incidence of HIV infection in older patients and understand the interplay of age and other confounding factors on the decision to include older patients in HIV testing at all levels of health care.

**Learning Objective 2:** Review the broad-based HIV testing recommendations for patients 13 to 64 in all health care settings.

**Case:** A 62 year old African American male with a 50+ pack year smoking history presents with progressive dyspnea, cough and cachexia. On admission, he was not hypoxic or tachypneic. Exam revealed was cachexia and glossitis. Laboratories studies revealed a sodium of 126 mEq/L and osmolarity of 254 mOsm/L. CT imaging of the chest revealed mild septal thickening. He was treated for presumptive COPD.

Unfortunately, his symptoms worsened. He was no longer able to work due to dyspnea. Three months later, he came to the ED with dyspnea, productive cough, and weight loss. Chest X-Ray showed no focal infiltrate. His room air saturation was 91%. At that visit, he was diagnosed with bronchitis, given nebulizer treatments, prescribed a course of azithromycin, and instructed to follow up in primary care.

His cough worsened and his dyspnea progressed until present at rest. One week later, he returned to the hospital. He was hypoxic and tachypneic. Exam revealed marked cachexia as he has lost 30lbs. His PaO₂ was 37mmHg and A-a gradient was over 80mmHg. CT imaging showed bilateral reticular ground glass opacities concerning for Pneumocystis pneumonia. Laboratories revealed a positive HIV test with a CD4+ count of 33.

**Discussion:** A growing number of older people now have HIV. Those over 50 represent a quarter of all people with HIV in the US. Most commonly diagnosed in younger patients, 1,983 cases were diagnoses in patients 60 years and older in 2010. Many are unaware of their diagnosis due to a general underappreciation of HIV rates in older patients.

Since 2006, the Center for Disease Control has recommended broad-based HIV testing for patients 13 to 64 in all health care settings. Efforts were made to reduce requirements for separate consent procedures and pretest counseling to facilitate testing at all levels of health care even the acute care setting. Some argue that a broad testing strategy could facilitate earlier diagnosis, expedite treatment, and reduce opportunistic infections. Rapid HIV tests are available with comparable sensitivity, specificity, and negative predictive value for screening at the HIV prevalence observed in most US testing sites.

Our patient accessed health care environments on three separate occasions prior to being tested for HIV. An HIV test was performed at initial presentation would have facilitated earlier diagnosis of his underlying opportunistic infection. In retrospect, our patient displayed may of the typical signs and symptoms of pneumocystis including progressive dyspnea, weight loss, hypoxia, and bilateral ground glass opacities. His symptoms were attributed to different etiologies on different occasions.

This case highlights the importance of thinking comprehensively about a patient’s symptoms and the importance of a broad-based HIV testing strategy. Physicians need to recognize that new HIV diagnoses do occur in older patients and that age should not preclude these patients from inclusion in HIV testing at all levels of health care.
Learning Objective 1: Recognize when to evaluate cerebrospinal fluid (CSF) in human immunodeficiency virus (HIV) patients co-infected with syphilis

Learning Objective 2: Recognize the sensitivity of CSF Venereal Disease Research Laboratory (VDRL) and the importance of clinical context for treatment

Case: A 35-year-old man with HIV, diagnosed in 2011, with an undetectable viral load, CD4 count greater than 400, adherent with antiretroviral therapy, presented with one year of progressively worsening neurological symptoms. Following his diagnosis of HIV, the patient was diagnosed with latent syphilis, which was refractory to several courses of intramuscular (IM) penicillin and doxycycline. For the past year, he reported back pain, leg numbness, and weakness which progressed to bowel and bladder incontinence a few weeks before presentation. During this time, he also had frequent headaches, accompanied by neck pain and vomiting.

The patient had a stiff neck, decreased sensitivity below T7, loss of proprioception in his toes, and a positive Romberg sign. He had a maculopapular rash on his palms and soles. His pupils accommodated, but did not constrict to light. Labs showed RPR titers of 1:16; his last set of titers changed from 1:32 to 1:8 following treatment. CT head, MRI thoracolumbar spine, and MRI brain were unremarkable.

He was started empirically on intravenous (IV) penicillin for suspected neurosyphilis while lumbar puncture results were pending. By hospital day 3, the CSF VDRL returned nonreactive. Treatment was continued because his symptoms were resolving. After completing 10 days of antibiotics, he had complete resolution of his symptoms and his CSF fluorescent treponemal antibody-absorption (FTA-ABS) returned reactive.

Discussion: HIV-infected patients with early syphilis are at an increased risk of developing neurosyphilis, an infection of the central nervous system by Treponema pallidum. This is critical as the incidence of syphilis has increased 33% from 2000 to 2004. The most common symptoms include sensory impairment (48%), pupillary changes (43%), and cranial nerve palsies (36%). Early neurosyphilis affects the meninges, resulting in meningitis symptoms. Late neurosyphilis typically affects the brain parenchyma and spinal cord, causing general paresis and tabes dorsalis.

In the 2010 Center for Disease Control treatment guidelines, CSF should be analyzed in all patients with serological evidence of syphilis and neurological symptoms. This is even more concerning in HIV-infected patients as they have a more rapid course and a higher risk of treatment failure, leading to permanent disability or death. Although studies have shown that HIV-infected patients with CD4 counts <350 cells/microliter have an increased risk of neurosyphilis, this case demonstrates that this diagnosis should be considered in any HIV patient with positive syphilis titers.

The diagnosis of neurosyphilis requires several tests, of which the most specific is a reactive CSF-VDRL. However, CSF-VDRL has a low sensitivity of 50% whereas the sensitivity of CSF-FTA-ABS is close to 100%. Therefore, a nonreactive CSF-VDRL does not rule out neurosyphilis, which is why our patient’s symptoms resolved. In summary, clinicians should consider prompt CSF examination in any HIV-infected patient, regardless of CD4 count, who has positive RPR titers and symptoms of neurosyphilis. In addition, it is paramount to continue neurosyphilis treatment based on clinical symptoms, and not solely on CSF-VDRL, as treatment can be life-saving.
Silent Squeeze: Abdominal Obstruction From Repeated Pericentesis

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Learning Objective 1: Improvement in the assessment and management of an atypical cause of intestinal obstruction in an End Stage Liver Disease (ESLD) patient with past history of multiple paracentesis.

Case: A 55 year-old African American male was admitted with complaints of diffuse abdominal pain and diarrhea for 2 days. Past medical history included end stage liver disease secondary to alcohol abuse, and refractory ascites treated with multiple paracentesis and medication such as spirinolactone, propranolol and furosemide. Physical exam revealed a tender distended abdomen with ascites. A computed tomogram (CT) of the abdomen demonstrated a complex loculated cyst in the anterior abdominal wall with ascending and descending colon wall thickening. After ruling out spontaneous bacterial peritonitis, a follow up ultrasound of the abdomen demonstrated a small pocket of fluid with multiple loculations and septations in the anterior abdomen. Later, the patient developed symptoms of obstruction. Despite nasogastric tube placement for decompression, his obstructive symptoms persisted. An obstructive series and a repeat abdominal CT scan showed dilated small bowel loops, suggestive of small bowel obstruction without any prominent lymphadenopathy suggesting cancer. A decision was made for an emergent exploratory laparotomy during which small bowel loops were found encased in a thick whitish membrane. The patient became too unstable to completely dissect the fibrous tissue. Microscopy of the specimen showed a fibrocollagenous tissue consistent with encapsulating peritoneal sclerosis. The Patient did not respond to steroids while in the ICU and remained on mechanical ventilation. With no clinical improvement the patient was made comfort measures and terminally extubated.

Discussion: Intestinal obstruction normally is a result of adhesions from prior surgery, past intrabdominal or pelvic trauma or an encroaching neoplastic mass. In an ESLD patient that presented with abdominal pain and obstruction, infection and neoplasm first comes to mind. It has been hypothesized that repeated paracentesis can alter the peritoneal membrane structure in a similar manner as peritoneal dialysis which can result in gross interstitial thickening of the membrane with fibrotic changes and loss of mesothelial cells due to repeated irritating stimuli. This fibrous change of the serous membrane of the peritoneum resulting in diffuse adhesions can lead to obstruction. This condition is known as encapsulating peritoneal sclerosis (EPS) or cocoon syndrome. Patients with ESLD with a history of multiple paracentesis presenting with abdominal obstruction after ruling out more common causes should be evaluated for EPS. Patients at risk of this condition are already in a fragile state. Successful treatment depends on recognizing key past historical events with clinical symptoms and imaging. Early surgical intervention and the use of tamoxifen with corticosteroids have been postulated to improve outcome.
Shoshin beriberi in a young man living on Japanese rice balls

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Learning Objective 1: Review clinical features of wet beriberi.

Learning Objective 2: Note that fatal vitamin deficiency could occur as a result of an unbalanced diet.

Case: A 24-year-old single man was in his usual state of health until 3 days before admission when he noticed chest pain and shortness of breath. On the day of admission, he called for an ambulance for his worsening dyspnea. En route to the hospital, the patient went into cardiopulmonary arrest and resuscitation was provided. Fortunately, his pulse came back in 4 minutes. On arrival, the patient was disoriented and was unable to provide history. Vital signs were; BT 35.2 degrees Celsius, BP 70/15 mmHg, HR 75 beats/min, RR 30 breaths/min. On physical exam, he had systemic edema, central cyanosis and hyporeflexia. Serum albumin level was 4.0 g/dL and BNP was 2,305 pg/mL. Arterial blood gas showed marked lactic acidosis with pH 6.80, pCO2 23.4 mmHg, pO2 397.0 mmHg, HCO3⁻ 3.4 mmol/L, and lactate 26.4 mmol/L. He was intubated and catecholamines were administered. An electrocardiogram showed complete right bundle branch block and flat T-wave in the inferior leads. A chest radiograph revealed prominent pulmonary trunk and moderate cardiomegaly, although a contrast-enhanced CT of the chest was negative for pulmonary emboli. An echocardiogram showed enlarged right ventricle with intraventricular septal flattening and tricuspid regurgitation. The cardiac index was 9.8 L/min/m², suggesting high cardiac output state, and the mixed venous oxygen saturation was 91.7 %. From these findings, thiamine deficiency was suspected as one of differential diagnosis and thiamine was administered. His hemodynamic parameters improved dramatically in only 3 hours after the administration of thiamine. Within a few days, hemodynamical findings returned to normal. Systemic edema had also subsided and his BMI at this point was 17.4. His pre-treatment thiamine level was as low as 17 ng/mL (normal: 24-66 ng/mL), and the patient was diagnosed with “Shoshin” beriberi. A thorough history was obtained after he had regained consciousness. He had no significant past medical history and was not taking any medications, drank alcohol on social occasions, had never smoked tobacco or used illicit drugs. The patient lived alone and due to his financial problems, he had been subsisting on rice balls made of only polished rice for the preceding 4 years. On the 23rd day of admission, he was discharged home in excellent general condition without any residual symptoms.

Discussion: A fulminant form of wet beriberi is called “Shoshin” beriberi and is characterized by hypotension, tachycardia, and lactic acidosis. If left untreated, patients may die from cardiopulmonary collapse within hours after the onset of symptoms. Due to the complexity of the clinical presentation and the lack of rapid diagnostic tests, thiamine deficiency is still being underrecognised, especially among young non-alcoholic patients. In our patient, we first suspected pulmonary embolism from the echocardiographic findings but it was ruled-out by the contrast-enhanced CT. Remarkable hypotension with a wide pulse pressure suggested decreased vascular resistance in a high-output state. It is essential that we do not miss the opportunity for early intervention and thiamine should be administered as soon as clinical suspicion for thiamine deficiency arises.