Foraging for Liver Failure

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Learning Objective 1: Recognize the clinical manifestations and treatment options of acute mushroom toxicity.

Learning Objective 2: Remind clinicians of the time course of Amatoxin poisoning.

Case: A healthy 44 year-old woman presented with crampy abdominal pain, vomiting and watery diarrhea for one day with subjective fevers and myalgias. Her symptoms began 10 hours after eating an omelet made with mushrooms found in her backyard. Her initial vital signs were normal. On exam the patient was tender to palpation in the left lower quadrant of her abdomen without guarding or rebound. Initial laboratory and imaging evaluations were also normal. Repeat laboratory studies 24 hours later revealed aspartate and alanine aminotransferases of 360 / 349 u/L respectively, an INR of 1.5, bicarbonate of 15 mEq/L and lactic acid of 3.8 mmol/L. Her transaminases peaked at 10,556 / 9,302 u/L and her INR was 2.4 after another 12 hours. Total bilirubin peaked at 60 mg/dL several days later. The patient underwent rapid transplant evaluation for acute liver failure, received IV Penicillin G and N-Acetylcysteine and was transferred to the ICU. Acetaminophen levels were normal as were markers of viral hepatitis. Her course was complicated by recurrent watery diarrhea and lower gastrointestinal bleeding. Although the patient was listed urgently for a liver transplant, she made a full recovery with supportive care. The mushrooms the patient ingested were confirmed to be from the Amatoxin producing Gallerina genus.

Discussion: Acute liver failure is a serious clinical entity encountered by general practitioners. The differential diagnosis often includes Acetaminophen toxicity, acute viral hepatitis, ischemic injury and other toxic exposures such as wild mushrooms. Amatoxin mushrooms accounts for 90% of mushroom related fatalities, with Amanita Phalloides being the most potent species. Once ingested, the toxins enter the portal circulation and are actively transported into hepatocytes, stopping protein synthesis and inducing apoptosis. Approximately 6-24 hours following ingestion the patient develops gastroenteritis with abdominal pain, diarrhea and vomiting with normal liver tests. 24-36 hours following ingestion, mild elevations in transaminases are detected. Two to four days afterwards, hepatocyte death, disruption of hepatic venous and biliary flow occurs, with significant elevations in transaminases and hyperbilirubinemia. Coagulopathy and encephalopathy follow, which can progress to multi-organ failure and death.

Treatment is supportive but measures can be taken to decrease toxicity. IV Penicillin blocks uptake of toxin to hepatocytes and N-Acetylcysteine limits damage from oxidative stress. Assessing the need for liver transplantation is critical because delays can lead to death as these patients can progress rapidly. Retrospective analysis of previous cases indicate that there are some tests that may help guide the clinician towards transplantation, including an elevated serum creatinine (>1.2 mg/dL) with a decreased prothrombin index (<10%) 3-4 days after ingestion. Both appear to be indicators of a poor outcome; neither criterion was met by our patient.

Initial evaluation of patients with suspected mushroom toxicity may not reveal any abnormalities. The delayed onset of symptoms following ingestion and the rapid progression of hepatotoxicity are telltale signs of Amatoxin ingestion, a rare but often fatal cause of acute liver failure.
TB or not TB, that is the question

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Learning Objective 1: Identify hemoptysis and weight loss as symptoms in chronic mycobacterial infections
Learning Objective 2: Understand the epidemiology and treatment of non-tubercular mycobacterium infections
Learning Objective 3: Recognize the critical role of transitions of care in preventing re-hospitalization

Case: An 83 year-old man with myelodysplastic syndrome presented with one month of hemoptysis and a fifty-pound weight loss. He noted increasing fatigue, anorexia and dysguesia. Three months earlier, he was diagnosed with reactivation pulmonary tuberculosis based on a positive Purified Protein Derivative (PPD), an abnormal chest X-ray and sputum smear positive for acid fast bacilli (AFB). He was treated with standard rifampin, isoniazid, pyrazinamide, ethambutol (RIPE) therapy without symptomatic improvement. On presentation, he had bilateral temporal and extremity wasting with coarse breath sounds bilaterally. His labs revealed pancytopenia. A chest X-ray revealed a large opacification in the right upper field. A follow-up CT with contrast revealed scattered nodular opacities with a right apical cavitary lesion. An AFB smear and culture was positive for Mycobacterium abscessus. A review of his medical record revealed his prior positive culture for Mycobacterium abscessus. Appropriate inpatient treatment was initiated.

Discussion: Unintentional weight loss, hemoptysis, upper lobe cavitary lesion, and a positive PPD is the classic presentation of Mycobacterium tuberculosis (TB). While TB is the most common of the mycobacterial infections, the general internist must recognize that it is not the only infection to present in this way. While patients suspected of having TB are commonly discharged on antibiotics, it is important that the internist recognize the importance of following-up on cultures and sensitivities to confirm the diagnosis. Prior to instituting long-term treatment, it is important to confirm that the etiology by following up on culture results, antibiotic sensitivities and ensuring patient follow up.

Mycobacterium abscessus is a non-tubercular mycobacterium that exists in water, sewerage, and soil. It is endemic to the Southeastern United States, but is reported throughout North America. Risk factors for M. Abscessus include immunosuppression, chronic lung diseases and prior tuberculosis. Among patients with hematological malignancies associated with pancytopenia, there is a higher prevalence of non-tuberculous mycobacteria infections. Mycobacterium avium-intracellulare is the most commonly isolated species, followed by M. abscessus, M. fortuitum, and M. kansasii.

The Initial evaluation of symptomatic patients includes excluding Mycobacterium tuberculosis and underlying malignancy followed by sputum culture. The treatment of non-tubercular pulmonary infections is based on active symptoms and the overall risk versus benefit of treatment. The treatment typically includes six months of an oral macrolide plus intravenous amikacin, tigecycline or cefoxitin. Antibiotics may only prevent dissemination and may not be curative secondary to the bacteria’s relative resistance to antibiotics. Continual treatment may be chosen if the patient remains symptomatic with cough, hemoptysis or “B” symptoms. Surgery is the only definitive treatment.
A rare presentation of Takotsubo Cardiomyopathy

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Learning Objective 1: Recognize thyroid storm as a rare cause of Takotsubo cardiomyopathy

Case: A 50 year old female with no prior diagnosed illnesses who presented with three days of nausea, low grade fevers, ongoing right upper quadrant (RUQ) abdominal pain and one episode of non specific chest pain. Admission examination revealed a febrile lady with sinus tachycardia, RUQ guarding and tenderness. Findings of leucocytosis on blood tests and positive Murphy’s sign on abdominal sonogram revealed a picture consistent with acute cholecystitis. A screening electrocardiogram showed diffuse precordial STE elevations and T wave inversions. Troponin levels returned mildly elevated (0.07 ng/mL. An emergent cardiac catheterization was undertaken which did not show any evidence of obstructive coronary artery disease or plaque rupture. A transthoracic echocardiogram was done which showed moderately depressed ejection fraction (30 – 34%) with severe akinesis of mid- distal left ventricular segments. Her presentation was consistent with stress induced cardiomyopathy precipitated by acute cholecystitis. She underwent open cholecystectomy on day 2 of admission. Her post operative course was complicated by lethargy, persistent sinus tachycardia to 150/min and unremitting fever up to 103○F. All infectious workup returned negative. As no apparent cause of persistent tachycardia and fever was evident, thyroid function studies were sent which revealed TSH <0.01 uIU/ml, free T4 7.42pg/ml, free T3 8.61pg/ml consistent with severe hyperthyroidism. Her overall picture was consistent with thyroid storm (Burch Wartofsky score of 55). She was started on metoprolol, methimizole and hydrocortisone with resolution of tachycardia and fever in next 2 days. Her thyroid stimulating antibodies were elevated at 491% (normal 0 – 139%). A transthoracic echocardiogram done in 2 weeks showed return of ejection fraction to normal and resolution of impaired wall motion. Final diagnosis of stress induced cardiomyopathy from thyroid storm (which in turn was precipitated by acute cholecystitis) was made. Patient continues to do well on antithyroid therapy as an outpatient.

Discussion: Takotsubo cardiomyopathy is a reversible form of left ventricular dysfunction which is typically preceded by an episode of intense physical or emotional stress. The presentation mimics that of a myocardial infarction with chest pain, elevated cardiac enzymes and ST segment elevation (usually anterior); however, coronary angiography does not reveal significant coronary stenosis or evidence of plaque rupture.

There is increasing evidence that the disorder may be caused by diffuse catecholamine induced microvascular spasm or dysfunction resulting in myocardial stunning or by direct catecholamine-associated myocardial toxicity. Given increased concentrations of adrenoreceptors at cardiac apex, apical ballooning may reflect focal damage from circulating catecholamines, however, it remains a hypothesis at this point. Thyroid hormones are known to increase myocardial susceptibility to catecholamines and this may explain occurrence of Takotsubo’s in patients with thyroid storm. Review of literature reveals only four cases of Takotsubo’s cardiomyopathy induced by thyroid storm. Keeping in mind the high mortality associated with thyroid storm, physicians should keep hyperthyroidism a consideration while working up such patients.
Streptococcus bovis Bacteremia Associated with Composite Lymphoma

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Learning Objective 1: Recognizing the importance of work-up to rule out underlying malignancy in patients with Streptococcus bovis (S. bovis) bacteremia

Learning Objective 2: Learning the general features of a very rare form of lymphoma; composite lymphoma

Case: An 86-year-old male patient with past medical history of mild dementia, deep vein thrombosis, hypertension, and type-2 diabetes mellitus was admitted for generalized weakness and asymptomatic hypoglycemia. Family members reported that the patient had been having generalized weakness, poor appetite and had fallen multiple times recently without loss of consciousness. His medications had included warfarin, metformin and glyburide. When he presented to the ED his vital signs were within normal limits. On examination he was found to be lethargic, diaphoretic and oriented only to person and place. Initial laboratory tests were unremarkable except for serum glucose of 69 mg/dL. Initial urinalysis showed hematuria without any sign of urinary tract infection. Blood cultures and urine culture from the day of admission were negative. On the third day of admission he was found to have severe sepsis. His blood cultures on that day reported S. bovis and Enterococcus faecalis. The latter also grew in the urine culture. The patient responded well to intravenous Vancomycin and fluid replacement. An extensive work-up was done to identify the source of S. bovis bacteremia. Trans-esophageal echocardiography showed no evidence of thrombus or vegetation. His colonoscopy showed a single sessile polyp with no evidence of malignancy. CT of the chest, abdomen and pelvis showed a 4.2 x 5.6 cm intra-abdominal mass adjacent to the liver and diffuse thoracic, abdominal and pelvic lymphadenopathy. An incisional biopsy of deep cervical/scalene lymph node and immunophenotypic analysis revealed composite lymphoma: classical Hodgkin’s lymphoma and CD5 positive B-cell lymphoproliferative disorder.

Discussion: Streptococcus bovis (S. bovis) infections in humans are usually associated with bacteremia and infective endocarditis (IE). Gastrointestinal tract is the main portal of entry for S. bovis. It has been well known that S. bovis bacteremia, with or without IE, is associated with underlying malignancy of the colon as well as extra-colonic malignancy or liver disease. Every patient with S. bovis bacteremia should undergo evaluation for IE and gastrointestinal malignancy.

S. bovis bacteremia with underlying lymphoma, mostly gastric lymphoma, was reported in very few case reports. To our knowledge this is the first S. bovis bacteremia case reported to be associated with composite lymphoma which is a rare disease and defined by the presence of two or more distinct lymphoma types in a single lymph node. The underlying mechanism for the association between S. bovis infection and malignancy remains elusive. We believe that, in our case, the liver involvement has provided a portal of entry from the hepatobiliary tree for S. bovis. This case supports the fact that S. bovis bacteremia cases need extensive workup to rule out underlying malignancy.
Case: A 20 year old previously healthy female presented to the emergency department with fever, myalgias, dyspnea and a productive cough.