

Case Report

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Jejunal Perforation-An Uncommon Complication of Gastrointestinal Tuberculosis

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Abstract

One third of the world's human population has been infected with Tuberculosis (TB), the prevalence being the highest in developing countries. With world travel becoming increasingly more common, disease can readily spread from endemic areas to areas not otherwise affected. TB is thought of as a pulmonary disease but, in fact, it can affect the entire organism. We present an unusual case of an intestinal perforation due to abdominal tuberculosis.

Case Presentation

A 48 year old male from Mexico was seen by his primary care physician complaining of diffuse abdominal pain and bloating for 1-2 days. The physician was concerned about serious intra-abdominal pathology and referred him to the Emergency Department (ED). The patient, however, waited 3 days before going to the ED. He arrived complaining of worsening abdominal bloating and fevers, but his pain had improved. The patient's family stated he was becoming confused and lethargic. He denied changes in his bowel movements, hematochezia, melana, nausea, or vomiting. He drank approximately 10 beers per day; otherwise his past medical and social history were unremarkable.

On physical exam: Temp-101.3; BP-136/92; HR- 134; RR-37; SpO₂-92% on room air.

General: He was in mild respiratory distress, confused and agitated.

HEENT: Poor dentition, no nuchal rigidity, pupils 3 mm equal and reactive.

Cardiovascular: Tachycardic with no murmurs.

Lungs: Rhonchi bilaterally.

Abdomen: Distended, tympanic, mildly tender to palpation diffusely, no rebound or guarding.

Neurologic: Confused, agitated, moving all extremities, no focal deficits.

Laboratory studies: WBC-12.9 with 48% bands, 44% PMNs, 5% lymphocytes and 3% monocytes; Hgb-14.2; platelets-199; procalcitonin-19.2; albumin-3.0. The INR, bilirubin and transaminases were within normal limits.

Imaging Studies: Chest X-ray-pneumoperitoneum and bilateral apical opacities.

CT scan: chest, abdomen and pelvis-Multiple bilateral pulmonary nodules and cavities, free intraperitoneal air and inflammatory changes in the ascending colon.

The patient was placed in respiratory isolation, and then taken to the operating room. A single 3 mm perforation in the jejunum was identified and resected. Postoperatively he developed an ileus and was not able to tolerate enteral nutrition or medications. He had started on ertapenem prior to the surgery, and that was continued until hospital day 2 when his AFB sputum smear came back 4+ positive. His quantiferon gold came back positive with a 12.75 tuberculosis antigen value. HIV returned negative.

There was a concern about tuberculosis meningitis. He underwent

a lumbar puncture which revealed: colorless, RBC-353, WBC-11, lymphocytes 88%, segs-7%, glucose-64, total protein-16, VDRL-negative, cyrptococcal Ag-negative, there was no organisms seen on gram stain, and no growth on culture. With the normal glucose and protein, meningitis was ruled out.

His initial anti-tuberculosis treatment was intravenous rifampin, linezolid, tobramycin and moxifloxacin. The patient's ileus slowly resolved soon on hospital day 6, so that the treatment could be changed to RIPE (rifampin, isoniazid, ethambutol, and pyrazinamide) therapy via nasogastric tube. Surgical samples of the jejunum demonstrated necrotizing granulomas. On hospital day 9, the gene Xpert test was positive. This study indicated an mTB sensitive to rifampin and isoniazid. Throughout the hospital stay, the patient's sputum samples remained positive for AFB. He had an improving nutritional state as evidenced by an increase in his albumin from 1.6 to 2.4 g/dL, a decrease in his heart rate from the 130's to the 80's, oxygen saturation improvement from 92% to 100% on room air, and a hemoglobin as low as 8.3 rising to 10.3 g/dL on discharge. He was able to tolerate his diet and had good oral intake. The patient was discharged to a public health isolation facility on hospital day 31 (Figures 1-3).

Discussion

Tuberculosis (TB) remains a worldwide health problem as



Figure 1: Chest X-ray: free intra-abdominal air, bilateral pulmonary nodules.

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approximately one-third of the world's population has been infected with *Mycobacterium tuberculosis*. In 2010, 8.8 million people became sick, and 1.4 million people died from tuberculosis. The biggest burden of disease falls on developing countries with over 95% of deaths from TB occurring in low to middle income countries. Global travel allows diseases easily to spread from country to country. The rates of tuberculosis, however, have been trending down worldwide, including the United States. In 2011, the incidence of tuberculosis in the United States was 3.4 cases per 100,000, the lowest recorded value since national reporting started in 1953 [1].

TB is predominantly a pulmonary disease, but it may affect any organ system. The gastrointestinal tract is the 6th most common organ system affected by tuberculosis [2]. Prior to the advent of antituberculosis treatment the rates of tuberculosis enteritis in patients with advanced pulmonary TB were at least 70%. Currently, tuberculosis enteritis occurs in 2-3% of patients with pulmonary tuberculosis. The most common location in the gastrointestinal tract to be affected in TB enteritis is the ileocecal region. When the gastrointestinal tract is involved, the ileocecal region is involved in 70-95% of the time. This may be due to the physiologic stasis and high aggregate of lymphoid tissue in this area. Other areas in the gastrointestinal tract affected, in decreasing order are: the jejenum, appendix, sigmoid colon, rectum, duodenum, stomach and esophagus [3]. Complications of tuberculosis enteritis may include abdominal pains, nausea, vomiting, bowel obstruction and perforation.

Considering and recognizing the diagnosis is key to the treatment and prevention the spread of tuberculosis. The classic symptoms of TB include night sweats, fevers, weight loss, pleuritic chest pains, cough, fatigue and hemoptysis. These typically progress slowly and are present for several weeks prior to the patient seeking medical attention. Radiographic evidence seen on a chest X-ray classically shows an upper lobe infiltrate, cavitary lesion and hilar adenopathy. Common findings on a Computed Tomography (CT) scan are cavity or centrilobular lesions and hilar adenopathy. For abdominal TB, a CT scan is the imaging modality of choice with barium studies being superior for mucosal-intestinal lesions. Gastrointestinal TB can be easily misdiagnosed because the symptoms are nonspecific and can mimic numerous other intra-abdominal pathologies, such as inflammatory bowel disease, colon cancer, or gastroenteritis.

Mortality rates from intestinal perforation due to TB vary from 17%-51% [4-6]. Perforation can occur at any time during the course of the disease, from the initial presentation to 4 months after the initiation of anti-tuberculosis treatment, and may occur in 6.6% of patients with abdominal TB [4,7]. Mortality rates are higher in patients when the surgical repair is more than 36 hours after perforation, or when there were multiple perforations and/or multiple strictures [4,5].

Patients that are unable to tolerate enteral medications, such as ours, cannot start the typical four drug anti-tuberculosis treatment (rifampin, isoniazid, pyrazinamide, and ethambutol) as these are enteral medications. Parenteral anti-tuberculin options include: Intravenous (IV) flouroquinolones (moxifloxicin-400 mg daily, levofloxicin-500-1000 mg daily and ciprofloxacin), intramuscular (IM) or IV aminoglycosides (amikacin-15 mg/kg up to 1000 mg daily, kanamycin-15 mg/kg up to 1000 mg daily and streptomycin-15 mg/ kg up to 1000 mg daily), IV rifampin-10 mg/kg up to 600 mg daily, IV or IM isoniazid-5 mg/kg up to 300 mg daily. Linezolid also has an off labeled use as an anti-tuberculosis agent. An acceptable treatment regimen is to use intramuscular streptomycin and isonizid with an intravenous fluoroquinolone until the patient is able to tolerate enteral nutrition [8].

In conclusion, Cases of abdominal TB with perforation are rare. While there are many people worldwide who have been exposed to TB and have latent TB, few will develop abdominal TB (2-3%). Among those even fewer will develop an intestinal perforation. The vast majority of TB cases are in developing countries, but with travel, cases of diffuse TB can be seen anywhere in the world. Intestinal perforation is a medical emergency with mortality rates as high as 51%. Delays in the diagnosis and treatment of intestinal perforation lead to worse outcomes. Due to this, we need to keep this diagnosis in mind and act quickly.

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