Intestinal Tuberculosis in a Liver Transplant Patient

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Abstract

Intestinal tuberculosis (TB) is an uncommon manifestation of tuberculosis, especially in Western countries, and is most often seen in immigrant and immunosuppressed patients. The incidence of intestinal TB has not been well documented for liver transplant patients in Western countries. This case report discusses the complications of intestinal TB in a liver transplant patient and addresses the importance of identifying the necessity for and timing of surgery. Given the immunosuppressed state of these patients, the expedient diagnosis and treatment of this potentially fatal condition is critical.

Keywords: Intestinal tuberculosis; Lymphoma; Chest X-ray; Pulmonary lesions

Case Description

A 52 year-old Filipino male with a past medical history of Hepatitis B and C, who underwent orthotopic liver transplantation in 2009, was admitted three years post-transplant with abdominal pain and lower gastrointestinal bleeding. An upper endoscopy was performed which did not reveal a source of bleeding. On colonoscopy, an ileocecal valve (ICV) ulcer was found and biopsies demonstrated necrotizing granulomas with no malignancy, acid-fast bacilli or cytomegalovirus [1]. Initially his symptoms resolved, until six months later when he developed recurrent abdominal pain, diarrhea and increasing weight loss, and underwent repeat colonoscopy. The colonoscopy demonstrated a non-healing 25% circumferential ulcer at the ICV and biopsies again showed inflammation, no acid-fast bacilli or cytomegalovirus (Figure 1). A CT scan was performed demonstrating marked thickening with adjacent mesenteric inflammation and edematous changes of terminal ileum, cecum, appendix and proximal ascending colon. No other abnormalities were identified in the abdomen or pelvis. A chest x-ray demonstrated no lymphadenopathy or pulmonary lesions.

Given his persistent symptoms and the concern for primary malignancy, lymphoma, ischemia or infection, he underwent a right hemicolectomy. Intraoperatively, there were white nodular implants along the entire small bowel (Figures 2 and 3), which were biopsied and revealed no evidence of malignancy on frozen section. The ileocecal area had a firm mass, which was resected without complication. Final pathology of the ileocecal area showed severe and extensive transmural enterocolitis with numerous necrotizing granulomas (Figure 4). Cultures from the small bowel implants grew drug susceptible Mycobacterium tuberculosis. He was started on quadruple drug therapy for TB, including ethambutol 1200 mg daily, pyrazinamide 1500 mg daily, isoniazid 300 mg daily, and rifampin 600 mg daily; in addition to pyridoxine 50 mg daily. His tacrolimus levels were monitored closely and adjusted given its increased metabolism while on rifampin.

The patient continued regular follow-up with Hepatology and Infectious Disease. His tacrolimus levels and liver function were monitored closely. The diarrhea he was experiencing before surgery improved within 1-2 weeks post-operatively. He completed two months of ethambutol and pyrazinamide, and nine months of isoniazid and rifampin. A colonoscopy performed one year after hemicolectomy demonstrated only post-surgical changes. Biopsy specimens from ileum and colon revealed unremarkable mucosa without granulomas. Tissue mycobacterial cultures were negative.

Discussion

Intestinal TB is the sixth most common extrapulmonary site of infection [2]. For patients who are immunosuppressed, such as transplant patients, the manifestations of this disease can be severe. Although any site of the gastrointestinal tract can be affected, the ileocecal area is the most common [2]. Patients can present with a variety of nonspecific symptoms, so it is important to keep this diagnosis in mind, especially

Figure 1: Colonoscopy with ileocecal valve ulcer.

Figure 2: Intraoperative with numerous small bowel implants.
Intestinal TB in liver transplant patients is extraordinarily rare. There is only one previous case report in the literature of a patient admitted with abdominal pain, fever, and diarrhea [8]. She was diagnosed with intestinal TB after a bowel resection was performed. She was started on anti-TB therapy, but died of septic shock post-operatively. Our patient is the only reported liver transplant patient who survived after surgical resection was performed for intestinal TB.

This case illustrates that tuberculosis should be considered in the differential diagnosis in liver transplant recipients with ileocecal obstruction. Identifying the need for surgery to prevent potentially fatal complications is crucial in this immunosuppressed population. Surgery can also aid in obtaining a definitive diagnosis, which is important given the effects of anti-TB drug therapy on liver function and immunosuppressive medication levels.

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It is not uncommon to have isolated intestinal TB with no signs of infection elsewhere in the body. The incidence of active TB infections in liver transplant patients is estimated around 1%, with this subset of patients having an 18-fold increased prevalence compared to the general population [6]. Most cases of active tuberculosis that occur post liver transplant represent reactivation disease from old foci of infection. Identifying patients at risk for reactivation disease is very important to determine whether treatment for latent TB infection should be pursued pre-transplant and is standard of care. The risks of post-transplant treatment include risk of drug-induced hepatotoxicity, specifically from isoniazid, which was reported to be as high as 39% in one case series [7].

Making the diagnosis of intestinal TB can be challenging. Symptoms can be non-specific, including abdominal pain, fever, weight loss, diarrhea and anorexia [3]. Colonoscopy can reveal a non-specific ulcer, and pathology typically reveals non-caseating granulomas, not always with the presence of acid-fast bacilli. Therefore, it can be difficult to definitively obtain a diagnosis of intestinal TB using conventional histopathology and culture. As a result, molecular analysis techniques have been used to try and improve the efficiency and accuracy of diagnosis. There has been literature published on detecting tubercle bacilli DNA by polymerase chain reaction, as well as success with *M*. tuberculosis DNA by polymerase chain reaction, as well as success with a monoclonal antibody to *M*. tuberculosis using a monoclonal antibody to *M*. tuberculosis monoclonal antibody staining [4,5].

Figure 3: Gross specimen with ulceration in ileocecal junction.

Figure 4: Histopathology with necrotizing granulomas.