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Tuberculous Peritonitis: A Case Report and Literature Review

Usha R. Ganga, MD and Larry Schafer, MD

ABSTRACT

We present a case of tuberculous peritonitis in the setting of alcoholic cirrhosis with ascites. A young American Indian male with alcoholic cirrhosis and ascites presented with low grade fever and weight loss. A diagnosis of tuberculous peritonitis was made by laparoscopic guided peritoneal biopsy. He was treated successfully with isoniazid and ethambutol for 24 months. The diagnosis of tuberculous peritonitis should be entertained in high risk populations such as American Indians, Asians, alcoholics, chronic ambulatory peritoneal dialysis patients and AIDS patients in the appropriate clinical setting. Definitive diagnosis can usually be made by laparoscopic guided peritoneal biopsy.

After a long period of decline, the incidence of tuberculosis has been increasing in recent years because of its association with acquired immunodeficiency syndrome (AIDS). Tuberculous peritonitis is the most common form of abdominal tuberculosis. It is difficult to diagnose because of its variable and nonspecific clinical presentation. The incidence of tuberculous peritonitis ranges from 0.4% - 1% of all reported cases of tuberculosis. However, its incidence is much higher (38%) in patients with tuberculosis complicating AIDS. Overall tuberculous peritonitis accounts for approximately 3% - 11% of all cases of extra-pulmonary tuberculosis. Tuberculous peritonitis is more common in women than men (2:1) and in alcoholic patients. It is important to make a definitive diagnosis since the prognosis of the disease depends on institution of appropriate treatment. The mortality rate was 49% in the preantibiotic era and is now 7% with appropriate anti-tuberculous chemotherapy.

CASE REPORT

A 33 year old American Indian male with a long history of alcoholism and alcoholic cirrhosis with ascites was admitted to a university hospital in California with a low grade fever, weight loss, malaise and weakness. A presumptive diagnosis of spontaneous bacterial peritonitis was made. The patient was treated with a course of triple antibiotics with some improvement and was discharged home. However, he was readmitted to the same hospital, shortly thereafter, with a recurrence of his symptoms. At that time ascitic fluid showed 2000 WBC/mm³ and bacterial cultures were negative. The patient signed out against medical advice and returned to Rosebud, SD. The patient continued to have a low grade fever and anorexia despite antibiotics. Subsequently, he was admitted to Sioux Valley Hospital for reevaluation.

Neither the patient nor his family had a history of tuberculosis. He was not taking any medications other than antibiotics. He quit drinking alcohol two months prior to admission. Physical examination was essentially normal except for a slightly distended abdomen with no shifting dullness and a few spider nevi on the upper chest. CBC revealed normal WBC count with 10% - 18% bands and normocytic, normochromic anemia. Serum bilirubin was high at 4.4 mg/dl but serum transaminases, glucose, total protein, BUN and creatinine were normal. PT and PTT were high at 15.0 sec and 40.0 sec respectively. Blood sputum and urine AFB smears and cultures were negative. Hepatitis B core and E antibodies were positive and Hepatitis A serology was negative. Serum ceruloplasmin, ferritin and alphafetoprotein levels were normal. Chest roentgenogram revealed loculated right pleural effusion. CAT scan of the abdomen showed ascites with splenomegaly. Ascitic fluid analysis showed 4200
The patient responded slowly to a regimen of isoniazid and ethambutol. He became afebrile and regained his appetite. He was discharged home on isoniazid and ethambutol and was instructed to return to his personal physician for follow up. He was continued on the above regimen for twenty four months.

**DISCUSSION**

The tuberculous bacilli gain entry to the peritoneal cavity by one of three mechanisms, transmurally from diseased bowel, from tuberculous salpingitis or from the blood stream. The most common pathogenesis of tuberculous peritonitis is reactivation of a long latent tuberculous focus in the peritoneum. Concurrent active pulmonary tuberculosis is uncommon, unless a patient has miliary tuberculosis.

Peritoneal tuberculosis is a disease of young adults. The average age of patients is 31 years.\(^5\) This figure varies from series to series and from country to country. In India it is 21-35 years, whereas in developed nations it is 40-55 years.\(^1\) Compared with non-Hispanic Whites, the overall risk of developing tuberculosis is 5.3 times greater for Hispanics, 4.7 times greater for American Indians, 6.4 times greater for non-Hispanic Blacks and 11.2 times greater for Asians and Pacific Islanders.\(^6\) Tuberculous peritonitis presents with vague abdominal symptoms. The physician must have high index of suspicion to make the diagnosis.

Tuberculous peritonitis manifests itself in two ways, the exudative or moist type and the plastic or dry type. The exudative type occurs in 95% of cases of tuberculous peritonitis and presents with ascites. The dry type presents with the typical doughy abdomen. Often the clinical picture is confusing and suggests an occult malignancy or ascites with cirrhosis. It is particularly difficult to diagnose tuberculous peritonitis in alcoholic patients since physicians tend to attribute ascites to alcoholic cirrhosis. Generally, patients present with abdominal symptoms of a week or longer duration. Usual symptoms include abdominal pain (70%-90%), abdominal swelling (72%), fever/night sweats (57%), anorexia (44%) and weight loss (55%).\(^7\) Coexistent pulmonary tuberculosis increases the frequency of fever and night sweats.

Laboratory studies are of little help and are non-specific. Skin tests are positive in 70%-89% of patients.\(^7,3\) Tuberculin skin testing is often negative in the face of substantial disease and in immunocompromised patients. Anemia is a common finding, 48%-80%,\(^3\) and is usually normochromic normocytic. Relative lymphocytosis was noted in 20%-32% of cases in one series.\(^3\) An elevated ESR was found in 80%-90% of cases, but only 12.5% of patients showed an ESR of more than 100 mm/hr.\(^8\) Typically peritoneal fluid is straw colored with a protein content equal to or greater than 3.0 gm/dl. However, transudates have been described, particularly with coexistent cirrhosis.\(^9\) In one series, ascitic fluid was found to be a transudate in 29% of patients.\(^10\) The white cell count is variable (100-4000/mm\(^3\)) with lymphocytes usually constituting 70% of the cells. In contrast, in the majority of chronic ambulatory peritoneal dialysis (CAPD) patients with tuberculous peritonitis, polymorphonuclear cells predominate in the peritoneal effluent.\(^11\) Acid fast bacilli are rarely found in the ascitic fluid, especially when small volumes of ascitic fluid are examined. AFB cultures are positive in 43%-66% of cases,\(^3\) although the sensitivity may rise to 83% when a liter of fluid is used for bacteriologic diagnosis.\(^12\) Since AFB cultures usually take 4-6 weeks, the diagnosis will be delayed in the majority of cases.

The activity of adenosine deaminase (ADA) in ascitic fluid is useful in the diagnosis of tuberculous peritonitis. This test is easy to perform and relatively inexpensive. In one series, the mean ascitic fluid ADA was 112.6 U/I in patients with tuberculous ascites and 16.3 U/I in those patients with ascites of other causes.\(^13\) It has a sensitivity of 100% and specificity of 96% in discriminating tuberculosis from other causes of ascites. Measurement of ascitic fluid ADA is especially helpful in diagnosing tuberculous peritonitis in endemic areas and in high risk population, although it does not replace the standard histological and microbiological methods. This test should be interpreted with caution in alcoholic patients since there are conflicting data regarding the diagnostic accuracy of the test in this population.\(^14,13\)

Rapid and accurate diagnosis can be made with the laparoscopic guided peritoneal biopsy. Culture and histologic examination of biopsy specimen raise the diagnostic sensitivity to 75%-100%.\(^14,15\) In a recent retrospective study from South Africa, which included 145 patients with tuberculous peritonitis, peritoneal biopsy specimens revealed granulomata with caseation in all patients. Acid fast bacilli were found in 73.8% of patients.\(^1\) In the same study, typical peritoneal tubercles were found by peritoneoscopy in 98% of patients and in the remaining 2%, only mild peritoneal erythema was observed. Interestingly, biopsies of these erythematous lesions showed acid fast bacilli. The
authors emphasized the need to take biopsy specimen of these lesions when they are found.

In conclusion, tuberculous peritonitis is an underdiagnosed illness. The diagnosis of tuberculous peritonitis should be entertained, particularly in American Indians, Asians, alcoholics, CAPD patients and AIDS patients, in the appropriate clinical setting. Ascitic fluid ADA levels provide a presumptive diagnosis in many cases. A definitive diagnosis can usually be made by laparoscopic guided peritoneal biopsy.

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REFERENCES


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