CASE REPORT

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The Diagnostic Role of Ascitic Fluid Adenosine Deaminase Activity in A Peritoneal Tuberculosis Case Presenting with Abdominal Pain and Diarrhea

ABSTRACT
A young case diagnosed with peritoneal tuberculosis with ascites will be presented here. Conditions that may pose a significant risk for the development of tuberculous peritonitis; poor hygiene, overpopulation, consumption of unpasteurized milk, cirrhosis, peritoneal dialysis, HIV infection, drug abuse and inadequate access to healthcare. In general, the tuberculosis agent reaches the gastrointestinal system via hematogenous route, ingestion of infected sputum, or direct spread. Peritoneal TB should be considered in the differential diagnosis in patients with abdominal pain, diarrhea, weight loss, anorexia, night sweats, presence of ascitic fluid, bilateral pleural effusion, pleural nodule appearance, and findings suggestive of peritonitis carcinomatosis, as in our case. Peritoneal tuberculosis is rarely diagnosed, without a high index of suspicion for this disease.

Keywords: Tuberculose, Ascites, Adenosine Deaminase

Karın Ağrısı Ve Diyare İle Başvuran Peritoneal Tüberküloz Olgusunda Asit Sıvısı Adenozin Deaminaz Aktivitesinin Tanısal Rolü

ÖZET
Assiti bulunan periton tüberkülozu tanısı alan genç bir vaka burada sunulacaktır. Tüberküloz peritonit gelişimi için önemli risk oluşturabilecek durumlar arasında; kötü hijyen, aşırı nüfus, pastörize edilmemiş süt tüketimi, siroz, periton diyalizi, HIV enfeksiyonu, uyuşturucu kullanımı ve sağlık hizmetlerine yetersiz erişim bulunmaktadır. Genelde tüberküloz ajanı, gastrointestinal sisteme hematojen yolla, enfekte balgam yutulmasıyla veya doğrudan yayılma yoluyla ulaşır. Karın ağrısı, ishal, kilo kaybı, iştahsızlık, gece terlemeleri, asit sıvısı varlığı, bilateral plevral efüzyon, plevral nodül görünümü ve olgumuzda olduğu gibi peritonit karsinomatozunu düşündüren bulguları olan hastalarda ayırıcı tanıda peritoneal TB akla gelmelidir. Periton tüberkülozu, yüksek bir şüphe indeksi olmaksızın nadiren teşhis edilir.

Anahtar Kelimeler: Tüberküloz, Assit, Adenozin Deaminaz.

INTRODUCTION

Tuberculosis is still an important public health problem in our country and other low-income countries. In the 2017 global tuberculosis report of the World Health Organization, the incidence of tuberculosis in our country is seen as 1.4 % (1).

Tuberculous peritonitis is a rare form with an incidence between 0.1% and 0.7% among all types of tuberculosis. The disease occurs equally in both genders, with most cases between the ages of 21 and 45 (2). Patients usually present with nonspecific symptoms such as abdominal discomfort and swelling, weight loss, fever, increased sweating, diarrhea. Delay in the diagnosis of patients causes an increase in mortality and morbidity. In this report, a case diagnosed with wet type (with ascites) peritoneal tuberculosis will be presented.

CASE

A 28-year-old male patient, who had no known history of chronic disease or drug use, first applied to the emergency service of our hospital with complaints of abdominal pain and diarrhea 20 days ago, was evaluated as acute infectious gastroenteritis and was discharged after treatment. The patient's complaints of abdominal pain gradually increased within 20 days after discharge, and diarrhea continued, and he was admitted to the emergency department again after 4 kilograms of weight loss in 20 days. The patient was admitted to the General Internal Medicine service due to the presence of free fluid in the abdomen and the findings suggesting possible peritonitis carcinomatosis in the abdominal computed tomography examination performed in the emergency department. Vital signs of the case were as follows; body temperature: 36.5 C, heart rate 80 / min, blood pressure 100/70 mm Hg, respiratory rate 16 / min. In the abdominal physical examination, although there was tenderness with palpation, defense and rebound were negative. There was no significant feature in other system examinations. When the systems were reviewed, it was learned that there was anorexia, night sweats, and watery diarrhea 8-10 times daily. In the case, whose lung examination was normal, an area compatible with minimal effusion was seen on posteroanterior chest radiography and thorax CT imaging was planned. The patient's cardiac examination was normal and his ECG had sinus rhythm, and his ECG was interpreted as normal. Whole blood count was as follows; white blood cells: 5700, Hgb: 12.6 g / dl, neutrophil: 3900, platelet: 240000. Biochemistry parameters showed no abnormal values except for albumin: 3.1 g / dl, globulin: 3.8 g / dl, CRP: 11.8. In viral serological tests of the patient; HBsAg, anti-HBs, anti HCV, anti-HIV, anti-HAV IgM was negative and anti HAV was IgG positive. Paracentesis was performed from the ascitic fluid of the patient with USG, and biochemistry parameters in the blood and ascitic fluid were examined and the ascitic fluid culture examination was requested. Ascites fluid biochemical tests were as follows; glucose: 70 mg / dl, potassium: 3.64 mmol / L, albumin: 2.6 g / dl, lactic dehydrogenase: 424, protein: 5.4 g / dl, sodium: 135 mmol / L. Albumin, protein and LDH levels were evaluated as high. In the ascitic fluid cell count, more than 1000 erythrocytes and 240 leukocytes per mm3 were seen. Ascitic fluid was evaluated to be compatible with exudate. The biopsy specimen taken from the left lower quadrant peritoneal implant with USG guidance was sent to the pathology laboratory. Bilateral pleural effusion and pleural nodule were observed in the chest CT of the patient. Pleural fluid examinations of the patient were planned considering peritoneal tuberculosis, peritonitis carcinomatosis, hematologic malignancy, and metastatic malignancy among the differential diagnoses. Under USG guidance, the fluid between the left visceral and parietal pleura was sampled by thoracentesis, and the biochemistry sample of the fluid, pleural fluid culture and pathological examination of the pleural biopsy material were requested. Biochemical analysis of pleural fluid was as follows; glucose: 88mg / dl, potassium: 3.8 mmol / l, albumin: 2.4 g / dl, LDH: 300, protein: 4.8 g / dl and interpreted as exudate according to Light's criteria. There was no bacterial growth in peritoneal and pleural fluid cultures. The result of the peritoneal biopsy sample was a lymphoplasmocytic inflammatory infiltrate accompanied by giant cells. Cytology sample was reported as "Blood, lymphocytes and histiocytes have been monitored, and it is recommended to investigate in terms of granulomatous diseases, especially tuberculosis." The pleural fluid of the case was also seen in favor of tuberculosis, resulting in Adenosine Deaminase level: 67 U / I. The patient was referred to Chest Diseases Hospital for 6 months of anti-tuberculosis therapy (isoniazid 300 mg / day, rifampicin 600 mg / day, pyrazinamide 1500 mg / day, ethambutol 1500 mg / day). At the control one month later, his general condition was good and improvement in his laboratory parameters was detected.

DISCUSSION

In addition to the initiation of antituberculosis treatment, the improvement in socioeconomic status has been associated with a decrease in all forms of tuberculosis (TB), including tuberculous peritonitis (3, 4). Although abdominal tuberculosis continues to be a major health problem in the developing world, the recent increase in the number of patients diagnosed with peritoneal tuberculosis in regions where TB is rare, is partly due to travel, migrations and HIV infection which increases susceptibility to opportunistic infection. In the literature, a frequent relationship between tuberculous peritonitis (TBP)

and cirrhosis particularly of alcoholic aetiology has been described in developed countries (3, 4, 5). Peritoneal dialysis and HIV patients include patients at high risk of developing TBP (3, 6, 7). While poor hygiene and overcrowding have been shown to have a causal relationship with TB, ingestion of unpasteurized milk may also be another factor in the rural area. HIV infection is the strongest among all these risk factors for TB development, as the Th1-type immune response, which is a defense weapon against Mycobacterium tuberculosis, is impaired in those with HIV infection (3). Diagnosis of peritoneal TB can easily be missed or inappropriately delayed unless there is a high degree of suspicion. In patients with suspected peritoneal TB, screening of Mycobacterium with the staining and culture of the ascitic liquid is of paramount importance. Mechanistically, ulcers and fistulas may develop as a result of the lesions in the intestines caused by bacilli reaching the intestines when the patient with active pulmonary tuberculosis swallows the infected sputum. On the other hand, there may be peritoneal tuberculosis and tuberculous ascites with spread from small bowel tuberculosis to mesenteric lymph nodes. A higher incidence of peritoneal tuberculosis has been reported in homeless, in prison, in immigrants, in persons with underlying conditions such as acquired immunodeficiency syndrome, malignancies, diabetes mellitus and peritoneal dialysis (3, 8). It has been suggested that peritoneal tuberculosis is caused by the reactivation of latent tuberculosis clusters in the peritoneum, which are usually caused by the spread of the primary lung focus through the hematogenous route (8). Insidious-onset ascites, which can accompany non-specific symptoms such as abdominal pain, weight loss, abdominal swelling, fever, and night sweats, can be counted among the clinical findings of tuberculous peritonitis. In other words, the most important symptom of tuberculous peritonitis is ascites and is observed in the vast majority of cases (9, 10, 11). Ascitic fluid white blood cell count ranges between 150-4000 / mm3 and lymphocyte dominance (3). Acidic fluid total protein levels> 25 g / L are known as a finding that can be seen in almost all cases with tuberculosis peritonitis. Because of a low serum-ascites albumin gradient (SAAG) (<11 g / L) is seen in 100% of patients with tuberculous peritonitis, SAAG (<11 g / L) should suggest tuberculosis peritonitis. A cutoff point of 39 IU / L (with 100% sensitivity and 97.2% specificity) was reported for the diagnosis of TBP, calculated by the ROC curve for the ADA value (8, 10). An increased ADA activity is thought to be related to the intensity of stimulation and the maturation state of the lymphocyte due to the immune cellular response to Mycobacterium tuberculosis (8). Ascitic fluid adenosine deaminase (ADA) activity, in addition to being recommended as a useful diagnostic test for abdominal TB, may be a useful screening test to study "ADA activity in ascitic fluid" in countries with a high incidence of TB and in high-risk patients (8, 10). In addition, in the diagnosis of peritoneal TB, it has been reported that the use of fast method like ascitic fluid ADA activity may be associated with a reduction in diagnosis time (8, 10, 12). In tuberculous peritonitis, the peritoneum is infiltrated with numerous yellow-white tubercles, lost its bright appearance, and becomes thick and hyperemic (13). Peritoneal tuberculosis can usually present in 3 different types: Wet type with ascitis; localized type; and fibrotic type with abdominal masses consisting of mesenteric and omental thickening. In tuberculous peritonitis, although the peritoneum is generally thickened and nodular, thickening on CT with minimal and significant enhancement and the presence of a "smooth" peritoneum suggest tuberculosis peritonitis; "nodular implants" and "irregular" peritoneal thickening suggest peritoneal carcinomatosis. While culture growth of Mycobacterium remains the " hallmark" for diagnosis, ADA screening in ascitic and/ or pleural fluid is a relatively new approach as in our case (13). "Caseation"; as a pathognomonic histologic lesion can only be seen in lymph nodes (13, 14) and therefore obtaining results from biopsy samples may be difficult. In this context, it is considered that the best diagnostic procedure for tuberculous peritonitis is peritoneal biopsy with laparoscopy (13, 14). Ascitic fluid adenosine deaminase (ADA) activity is thought to be a useful diagnostic test for tuberculosis peritonitis (13. 15). Abdominal tuberculosis has many different faces and a wide variety of clinical symptoms, and it may be necessary to review a wide range of diseases in patients with differential diagnosis because it is a difficult condition to diagnose (15, 16, 17). Peritoneal TB needs to be considered in the differential diagnosis when patients with abdominal pain, diarrhea, weight loss, anorexia, night sweats, the presence of ascitic fluid, bilateral pleural effusion, pleural nodule appearance and the findings suggesting peritonitis carcinomatosis are encountered as in our case. The internist should search for tuberculosis and exclude this curable disease in any patient presenting with a suitable clinical picture.

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