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Primary peritonitis due to brucellosis mimicking tuberculous peritonitis

Tüberküloz peritoniti taklit eden bruselloza bağlı primer peritonit

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Peritonitis due to brucellosis is extremely rare and the reported cases are mostly chronic hepatic failure patients with ascites or chronic renal failure patients on continuous ambulatory peritoneal dialysis. We report a 20-year-old male patient, with no underlying disease, who was diagnosed as peritonitis due to brucellosis mimicking tuberculosis, with ascites with pleocytosis, lymphocytic predominance and high levels of adenosine deaminase.

Key words: Brucellosis, peritonitis, tuberculosis, adenosine deaminase

Bruselloza bağlı peritonit nadiren bildirilmiştir. Bildirilen olgular çoğunlukla kronik karaciğer hastalığına bağlı asiti olan ya da kronik böbrek yetmezliği nedeniyle periton diyalizi uygulanan hastalardır. Altta yatan hastalığı olmayan 20 yaşındaki erkek hastada gelişen ve asit mayiinde lenfosit hakimiyetinde pleositoz olması, asit mayii adenozin deaminaz düzeyinin yüksek olması nedeniyle tüberküloz ile karışan bir olguyu bildirdik.

Anahtar kelimeler: Bruselloz, peritonit, tüberküloz, adenozin deaminaz

INTRODUCTION

Although brucellosis is a systemic disease that may involve any organ and system of the body, peritonitis is extremely rare. The reported cases of bacterial peritonitis caused by *Brucella spp.* either had ascites due to cirrhosis or had undergone peritoneal dialysis due to chronic renal failure (1-4). Primary peritonitis has been reported in adult patients with alcoholic cirrhosis, postnecrotic cirrhosis, chronic active hepatitis, acute viral hepatitis, congestive heart failure, metastatic malignant disease, systemic lupus erythematosus, and lymphedema, and rarely in patients without any underlying disease. *Escherichia coli* is the most frequently isolated pathogen followed by *Klebsiella pneumoniae and Staphylococcus pneumoniae* (5). We present a case of peritonitis due to acute brucellosis without any underlying disease.

CASE REPORT

A 20-year-old male admitted to our department with the complaint of abdominal pain, abdominal distention, mild fever, night sweats and weight loss of 5 kg for the last month. He was previously healthy, of rural origin, and reported close contact with sheep, goats and cows and intake of unpasteurized cheese. Physical examination revealed a temperature of 37°C, diminished breath sounds on the left lung base, mild diffuse tenderness on the abdomen, and ascites.

Laboratory findings were as follows: white blood cell count (WBC) 7400/mm^3 (68% polymorphonuclear cells, 19% lymphocytes, 8% monocytes, 3% eosinophils), hemoglobin 12.9 g/dl, platelet count 369,000/mm^3, erythrocyte sedimentation rate (ESR) 49 mm/h, and C-reactive protein (CRP) 64 mg/L. Biochemical evaluation of blood including aminotransferases, total protein and albumin was normal. Blood cultures were negative. Serological tests for HBS Ag, anti-hepatitis C virus (HCV) and anti-human immunodeficiency virus (HIV) were negative. Brucella serum agglutination (Wright test) was positive with a titer of 1:160. PPD was

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positive (15 x 15 mm). Chest X-ray showed left moderate pleural effusion. Abdominal ultrasonography revealed diffuse septated ascites. Paracentesis and thoracentesis were performed. Classical Light's criteria and modified tests were used while evaluating the ascitic and pleural fluids (6-8); results are seen in Table 1.

Tuberculous peritonitis was considered in the patient due to PPD positivity, septated ascites with lymphocytic predominance and elevated adenosine deaminase (ADA) level in ascitic fluid; therefore, four-drug antituberculosis therapy (isoniazid 300 mg/d + rifampicin 600 mg/d + pyrazinamide 2500 mg/d + ethambutol 1500 mg/d) was initiated. On the eighth day of therapy, scrotal pain occurred. Ultrasonography revealed left epididymitis. Abdominal distention and scrotal pain diminished with antituberculosis therapy; he was discharged on the 14th day of the treatment. He admitted to our outpatient clinic with augmented complaint of abdominal distention and was re-hospitalized. Ascites was still present and paracentesis was repeated. Pleocytosis with lymphocytic predominance was detected for the second time and the results are presented in Table 1. ESR and CRP values were still high with minor decrement, whereas biochemical evaluation of the blood was again normal. Serum Brucella Wright test was repeated to determine positivity, with a titer of 1/640. Ascitic fluid Brucella Wright test was also positive, with a titer of 1/32. Antituberculosis therapy was ceased and rifampicin 1x600 mg peroral (po) and doxycycline 2x100 mg po were started. The complaints of the patient resolved in two weeks with this treatment and ascitic fluid was found to disappear in the ultrasonography done in the second month of the treatment. The treatment was completed at the end of four months. No relapse occurred during the six-month follow-up.

DISCUSSION

The liver is frequently involved in brucellosis since it is the largest organ of the reticuloendothelial system. A clinically unimportant sign of this involvement is mild elevation of hepatic transaminases (1). Involvement of other gastrointestinal sites are rare; there are only a few cases reported (9-13). Peritoneal involvement is extremely rare (2-4).

To our knowledge, there are only two cases of peritonitis due to brucellosis in the English literature, in whom peritonitis was not related to any underlying disease or there was no underlying disease (14). One was a 36-year-old male patient with no underlying disease who developed ascites during the course of acute brucellosis. The second was a 51-year-old male with HBsAg positivity and moderate alcohol dependence in whom diagnosis of cirrhosis was excluded by liver biopsy. Ascites with pleocytosis and lymphocytic predominance, which disappeared with brucellosis treatment, was present in both of these cases, as in our case.

ADA is an enzyme of purine degradation with important function in the proliferation and differentiation of T lymphocytes. Measurement of ADA level in ascitic fluid seems to be useful in establishing the diagnosis of tuberculous peritonitis. A meta-analysis revealed that ADA has high sensitivity and specificity in the diagnosis of tuberculosis peritonitis, in which 39 IU/L was found to be the optimal cut-off point (15). Serum ADA level was shown to increase in acute brucellosis (16). However, since ascites is rarely seen in brucellosis, there are no studies related to ADA level in ascites secondary to brucellosis. It is probable that it increases in ascetic fluid secondary to brucellosis. It was high in our case, which caused the misdiagnosis of tuberculosis.

Table 1. Results of examination of the ascitic and pleural fluids

	Ascitic fluid on admission	On the 27th day	Pleural fluid on admission
Leukocyte count	1600 (96% lymphocytes)	2700 (90% lymphocytes)	5800 (96% lymphocytes)
Protein (g/dl)	4.50	5.24	4.78
LDH (IU/L)	333	171	167
SAAG/SEAG	<1.1	<1.1	<1.2
ADA (IU/L)	88	45	70
Gram stain	No microorganism	No microorganism	No microorganism
ARB stain	Negative	Negative	Negative
Bacterial culture	Negative	Negative	Negative
TB BACTEC	Negative	Negative	Negative
Fluid Brucella Wright test	Not tested	1/32	Not tested

LDH: Lactate dehydrogenase. SAAG: Serum-ascites albumin gradient. SEAG: Serum-effusion albumin gradient. ADA: Adenosine deaminase. TB: Tuberculous.

In conclusion, ascites with pleocytosis, lymphocytic predominance and elevated levels of ADA may be seen in tuberculous peritonitis and peritonitis secondary to brucellosis. Therefore, Brucella Wright test must be studied before initiation of empirical anti-tuberculosis therapy, and it is better to repeat the test two weeks later to detect any increase in titer.

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