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A Rare Immune Thrombocytopenia Caused by Brucellosis: A Case Report

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ABSTRACT

Immune thrombocytopenia is an autoimmune disorder characterized by accelerated platelet destruction. It is occasionally associated with accompanying infections. Here we report a case of acute brucellosis that presented with immune thrombocytopenia. A 73-year-old woman who worked in animal husbandry was admitted to the emergency department with a 3-month history of left-sided lower back pain. She had no history of hemorrhage. Her platelet count was found to be very low. Immune thrombocytopenia diagnosis was established, and methylprednisolone treatment was initiated. Subsequently, *Brucella melitensis* growth detected in blood culture. She responded well to rifampicin plus doxycycline treatment along with corticosteroids. In conclusion, we suggest that physicians remain alert for brucellosis in subjects with thrombocytopenia involved in animal husbandry.

Keywords: Purpura, Thrombocytopenic, Idiopathic, Brucellosis, Animal Husbandry, Case Report

INTRODUCTION

Immune thrombocytopenia is an autoimmune disorder characterized by accelerated platelet destruction driven by auto-antibodies, resulting in decreased thrombocyte lifespan [1]. Although immune thrombocytopenia is usually idiopathic, it may be associated with malignant conditions (i.e. lymphoma, chronic lymphocytic leukemia), rheumatologic disorders (i.e. systemic lupus erythematosus), certain medications and infections [2]. Association of immune thrombocytopenia and acute brucellosis is a very uncommon clinical picture.

This case report aimed to present an elderly woman diagnosed with immune thrombocytopenia and acute brucellosis.

CASE PRESENTATION

A 73-year-old woman was admitted to the emergency department with a 3-month history of left-sided lower back pain. She was living in a rural area of Bolu province, in Turkey. She earns a living by animal husbandry (cattle). She denied the use of any medications, including antibiotics and non-steroidal anti-inflammatory drugs.

On physical examination, she was well appeared, conscious, oriented and cooperative. Her body temperature was 38.5 °C, respiratory rate was 18 per minute, blood pressure was 130/85 mmHg, and heart rate was 72 per minute. There were no signs of active bleeding. There were no petechial or purpura on skin examination. Similarly, no gingival bleeding was noted. There were no enlarged lymph

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nodes. Hepatomegaly and splenomegaly were absent. Laboratory analyses of the patient were as follows: Leukocyte count: 6270/mm³ (Reference range: 4000-10000/mm3), Hemoglobin: 12 g/dL (Reference range: 12-16g/dL), hematocrit: 38% (reference range: 37-48%), platelet count: 8140/mm³ (Reference range: 150000-400000/mm3), alanine transaminase: 91U/L (Reference range: 0-50 U/L), aspartate transaminase: 62 U/L (Reference range: 0-35 U/L), serum creatinine: 1.1 mg/dL (Reference range: 0.6-1.2 mg/dL). Prothrombin and partial thromboplastin times were in normal range. Blood smear revealed that platelet count was consisted with hemogram test and there were no abnormalities in erythrocyte and leukocytes.

Since the diagnosis of immune thrombocytopenia was established, 60mg/day (1mg per kg of body weight) methylprednisolone treatment was initiated and transferred to the internal medicine ward. She developed fever (38.1 centigrade degree) once on the second day of hospitalization. There was no focus for infection on repeated examination. However, two sets of blood cultures obtained.

Serological tests for hepatitis A, hepatitis B, hepatitis C, human immune deficiency virus, varicella-zoster virus and Epstein-Barr virus were all negative. Rose Bengal test for Brucella was studied, and it was positive at a 1/160 titer. Brucellosis treatment (doxycycline 2x100mg and rifampicin 2x300mg) was initiated. Streptomycin was avoided because of low-level hearing loss on auto-laryngological examination. Since there was no significant increase in platelet count on the fifth day of hospitalization, methylprednisolone treatment was switched to dexamethasone 40mg/day for four days in a cycle. Both sets of blood cultures were reported to be positive for Brucella melitensis. A diagnosis of acute brucellosis was established. Platelet count rose to 20000/mm3, dexamethasone, doxycycline, and rifampicin treatments were continued according to the suggestions on hematology and infectious diseases consultations. On the tenth day of hospitalization, platelet count reached to normal range (400.000/mm3). Therefore, dexamethasone treatment was discontinued. She was discharged from the hospital with a full recovery with doxycycline and rifampicin treatment instructions and a follow-up visit appointment within two weeks.

DISCUSSION

Brucellosis is a zoonotic infection transmitted to humans from infected animals (cattle, sheep, goats, camels, pigs, and others) or by contact with infected tissue or liquids [3]. It is the most common zoonosis worldwide and is an important public health problem in many developing counties [3,4]. Worldwide, approximately 500,000 cases are reported annually [5]. It is estimated that 2.4 billion people were at risk for brucellosis [4]. All age groups and both genders are affected equally. The prevalence of brucellosis has been increasing due to growing international tourism and migration [6,7]. The patient presented had cattle and at risk for brucellosis.

Brucella are small, immotile, facultative intracellular aerobic rods, 0.5 to 0.7 micron in diameter and 0.6 to 1.5 micron in length [8]. Gram staining demonstrates single, tiny, gram-negative coccobacilli. Brucella are taken up by local tissue lymphocytes, enter the circulation via regional lymph nodes, and seed throughout the body, with tropism for the reticuloendothelial system. The incubation period (from acquisition to clinical manifestations) is usually two to four weeks; occasionally, it may be as long as several months [3,9].

Brucellosis typically presents with insidious onset of fever, malaise, night sweats (associated with a strong, peculiar, moldy odor), and arthralgia [3,5]. The fever pattern is variable; it may be spiking and accompanied by rigors or may be relapsing, mild, or protracted. Additional symptoms may include weight loss, arthralgia, low back pain, headache, dizziness, anorexia, dyspepsia, abdominal pain, cough, and depression [3,10]. The present case had low back pain on the left side for months. Physical findings are variable and nonspecific; hepatomegaly, splenomegaly, and/or lymphadenopathy may be observed.

Clinical manifestations of brucellosis are varied and range from minimal symptoms to extreme morbidity and occasional fatalities. Among the various clinical manifestations, thrombocytopenia is less common and has been reported in 3% to 26% of cases [11]. There have been few reports of Brucella-induced thrombocytopenia, most of which were case reports [12,13].

Hematological complications of brucellosis have been documented and they were ranging between mild anemia, leukopenia, disseminated intravascular coagulation, pancytopenia and severe thrombocytopenia [14]. Isolated thrombocytopenia was observed in 2.6% of patients with active brucellosis [15]. According to the World Health Organization recommendations, the choices of antimicrobials for the treatment of brucellosis are doxycycline and rifampicin [12,16].

Treatment strategies of thrombocytopenia depend on what is causing it. First-line treatments for immune thrombocytopenic purpura are corticosteroids and intravenous immunoglobulin. However, as emergency treatment, platelet transfusions can rapidly increase the platelet count [17]. Karsen et al. reported that without corticosteroids and intravenous immunoglobulin, combination therapy including doxycycline and rifampicin and platelet suspensions led to better treatment outcomes for ten patients with severe thrombocytopenia (platelets <20,000/mm³) [12]. Additionally, some authors have reported successful results with the administration of intravenous immunoglobulin and/or steroids in conjunction with brucellosis treatment [18,19]. In a study by Songsong Xie et al., two patients with a platelet count of ≤10,000/mm3 used a combination of doxycycline, rifampicin, platelet transfusions, corticosteroids, and immunoglobulin. The other two patients (platelets ≥10,000/mm3 and ≤20,000/mm3) used a combination of doxycycline, rifampicin, and platelet suspensions. All four patients with severe thrombocytopenia (platelet count of <20,000/mm³) had good treatment outcomes. Twelve patients (platelets ≥20,000/mm3) only used a combination of two antibiotics. All of the patients were treated successfully with no evidence of recurrence at follow-up visits. These findings have important implications for improving the treatment outcome in patients with Brucella-induced thrombocytopenia [13].

In a case study by Tajeldin Mohammedian Abdullah et al., a case of thrombocytopenia did not respond to 5-day antibiotic treatment (rifampicin, doxycycline) despite the diagnosis of brucellosis. Platelet count was elevated after methylprednisolone treatment at 1 mg/kg dose for three days. The rapid response to steroid observed in the study case supports the diagnosis [14].
Tajeldin Mohammedien Abdullah et al. suggest that immune thrombocytopenia diagnosis should be considered in brucellosis patients who present with severe thrombocytopenia and do not respond to anti-brucellosis treatment. Starting steroid therapy is the mainstay in the treatment of bleeding due to Brucella induced- thrombocytopenia [14].
Songsong Xie et al. recommend that doxycycline + rifampin + corticosteroid + intravenous immunoglobulin + platelet transfusion be administered to patients with Brucella-induced thrombocytopenia when the platelet count is ≤10,000 / mm3. When platelet counts ≥10,000 / mm3 and ≤20,000 / mm3, they recommend three-drug regimens of doxycycline + rifampin + platelet transfusions in patients with Brucella-induced thrombocytopenia [13].

CONCLUSION

In conclusion, we suggest that physicians remain alert for brucellosis in subjects with thrombocytopenia involved in animal husbandry.

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