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CASE REPORT – OPEN ACCESS

Brucellosis Presented with Fever and Generalized Maculopapular Rash

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ABSTRACT

Background: Brucellosis is a multisystemic zoonosis that can affect all body organs and systems. Musculoskeletal system is the most affected system; however, cutaneous involvement is quite rare.

Case Report: A 31-year-old male who was previously healthy was admitted with fever and generalized maculopapular rash for the last three days before his admission to the hospital. He was eventually diagnosed with brucellosis based on the clinical history and epidemiological features. Brucellosis treatment was administered for six weeks and the patient recovered completely.

Conclusion: In endemic regions, brucellosis should be included in the differential diagnosis of the patients presenting with fever and generalized maculopapular rash.

Keywords: Fever, maculopapular rash, brucellosis

INTRODUCTION

Brucellosis is a worldwide zoonotic disease affecting all organs and systems. Osteoarticular system is the most affected system. Patients with osteoarticular system involvement usually present with sacroiliitis, spondylodiscitis and peripheral arthritis. In a recent systemic review, the frequency of arthralgia was reported as 62%. However, cutaneous manifestations of brucellosis are less encountered. Papulonodular, maculopapular and erythema nodosum-like lesions are the most frequent cutaneous lesions in the brucellosis. Frequency of cutaneous lesions due to brucellosis was reported in a systemic review as 7%. Moreover, cutaneous involvement as the predominant manifestation of brucellosis was occasionally reported (1–4). In this paper, we present a rare brucellosis case whose predominant manifestation was widespread maculopapular rash.

CASE REPORT

A 31-year-old previously healthy male was admitted with fever and generalized maculopapular rash for the last three days. He lived in the rural area and had a history of tick bite 10 days before presentation. His family history was positive for brucellosis. His throat and conjunctiva were hyperemic, and generalized maculopapular rash was present (Fig. 1a, b). Complete blood count, biochemical tests, C-reactive protein and erythrocyte sedimentation rate were in normal limits. HBsAg, antiHCV and antiHIV were all negative. Neither hepatomegaly nor splenomegaly was detected. Group A β hemolytic streptococci did not grow in throat culture. Due to a history of the tick bite, Mediterranean spotted fever and Lyme disease were suggestive of in the preliminary diagnosis, doxycycline 100 mg twice a day was started orally. Meanwhile, *Rickettsia conori* and *Borrelia burgdorferi* antibodies were investigated by an indirect fluorescent antibody test. *R. conori* IgM and IgG were found positive at 1/96 and 1/40 titers, respectively. *B. burgdorferi* IgM was negative and IgG was single positive with an indirect fluorescent antibody test. Because fever and rash persisted at the fourth day of doxycycline treatment, brucellosis can mimic every disease which is also endemic in Bolu region of Turkey (1%) and the patient's positive family history for brucellosis (1, 5), he underwent Brucella tube agglutination test which was found positive at 1/320 titer. We asked the patient whether he consumed raw or unpasteurized dairy products, and he confirmed to do so. At this stage, he was diagnosed with brucellosis and then, rifampicin 600 mg orally once daily was added to the treatment. After three days of brucellosis treatment, his fever returned to normal and his rash disappeared completely, so brucellosis treatment was continued. During his follow-up, acute phase reactants remained normal. Thereafter, he was discharged with a recommendation for outpatient control. At one month control, *R. conori* IgM and IgG were investigated and found positive at 1/192 and 1/80 titers, respectively. Brucellosis treatment was completed to six weeks and the patient recovered completely. The patient's consent was obtained for this case report.

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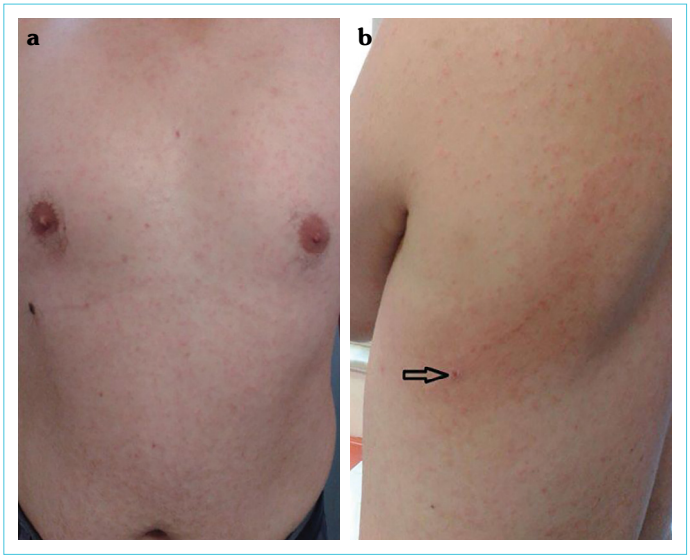

Figure 1. (a) Generalized maculopapular rash. (b) Generalized maculopapular rash and tick attachment site (arrow)

DISCUSSION

Our patient mainly presented with fever and widespread maculopapular rash. According to clinical presentation and epidemiological features, the differential diagnosis included Mediterranean spotted fever, Lyme disease and brucellosis.

We ruled out Mediterranean spotted fever because *R. conori* antibody titers did not show meaningful rise (four-fold) after one month. Thus, we interpreted *R. conori* test results as false positive due to cross-reactivity from bacterial pathogens (6).

We ruled out Lyme disease because the seroprevalence of Lyme disease in our region is 11% (7). When this seroprevalence was considered, *B. burgdorferi* IgG single positivity was related to probable previous exposure rather than acute infection. At this stage, we thought that a tick bite was a coincidental event not related to the patient's subsequent symptoms. Hence, we considered brucellosis as the final diagnosis.

Bolu is one of the brucellosis endemic cities in Turkey. Farming and stockbreeding are common in this region. In a previous study, rose bengal and wright tube agglutination tests were found positive in 1.7% and 1.1% of the people in rural areas of Bolu, respectively (5).

Brucellosis is a multisystemic disease affecting many organs and systems. Osteoarticular system is the most affected system; however, cutaneous involvement is very rare and a specific cutaneous finding was not described in brucellosis (8). Furthermore, we could find only two cases of brucellosis with isolated cutaneous involvement in the form of diffuse maculopapular rash in the previous English literature (3, 9). We believe that it is worthwhile calling attention to the possibility that the only manifestations of brucellosis would be diffuse maculopapular rash.

Systemic symptoms like fever, night sweats and myalgia are the most encountered manifestations of brucellosis so that cutenaous manifestations may be overlooked. Our case presented with fever and disseminated maculopapular rash, especially affecting the thorax and upper extremities, which resolved after three days of brucellosis treatment.

There are some pathophysiologic mechanisms that explain brucellar skin lesions. The most widely accepted one is the hematogenous spread of the Brucella bacteria to the skin. Some other arguments can also explain the brucellar skin lesions, such as direct inoculation of Brucella bacteria, hypersensitivity reactions and immune complex depositions (9).

At admission and during follow-up, acute phase reactants (APRs) of our patient were always in normal limits. Although the majority of the brucellosis patients have elevated APRs, a significant proportion may still have normal APRs. Similar to our case, APRs were found normal in some of the patients in a previous study (10).

Brucellosis may affect many organs and systems. Hence, it may present with a wide range of clinical diversity. Early and accurate diagnosis and treatment are of paramount importance to prevent further complications.

CONCLUSION

In endemic regions, brucellosis should be included in the differential diagnosis of patients presenting with fever and generalized maculopapular rash.

Informed Consent: Written informed consent was obtained from the patient who participated in this study.

Peer-review: Externally peer-reviewed.

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