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Case Report

CASE REPORT

Leptospirosis presented with erythema nodosum on four limbs: an unusual presenting

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Abstract

Leptospirosis is a common disease between humans and animals characterized by a wide range of clinical manifestations. Erythema nodosum (EN) is a common clinical form of panniculitis or subcutaneous adipose inflammation caused by hypersensitivity responses to antigens, but the presence of EN in a subject with leptospirosis is a very rare case presentation. We will present a 42-year-old man with a headache, myalgia, nausea and rigid tender on the shin and both forearms, which was a typical form of EN lesions.

INTRODUCTION

Leptospirosis is a common disease between humans and animals characterized by a wide range of clinical manifestations [1]. Leptospirosis, in its mild form, can present as a flu-like illness with headaches and myalgia, and its severe form is characterized by jaundice, kidney dysfunction and a bleeding disorder called 'Weil's disease' [2]. Erythema nodosum (EN) is a common clinical form of panniculitis or subcutaneous adipose inflammation caused by hypersensitivity responses to antigens [3], but the presence of EN in a subject with leptospirosis is a very rare case presentation [4]. These lesions usually occur abruptly as nodules or painful red round plaques on the lower limbs, especially the calf. The approximate size of these lesions is about 1 to 5 cm, which is symmetric and bilateral. Its prevalence in various studies is reported to be one in every 100 000. EN can develop at any age and is more prevalent in the second to fourth decades and is more common in women than in men [5]. There are many etiologies for this symptom, including infections, medications, pregnancy and autoimmune diseases [3]. In this article, we will present a patient with rigid tender on the shin and both forearms, which was a typical form of EN lesions.

CASE REPORT

A 42-year-old man presented to the infectious disease clinic with a fever, headache, myalgia, nausea and non-pruritic skin lesions over his arms and legs (Fig. 1). He worked in construction and reported contact with cattle and no history of travel within the last 6 months but had a history of swimming in a forest pond 1 week ago. The illness had started 2 days after his return home from the forest pond. He was presented to the hospital at septicemia stage. Physical examination revealed numerous erythematous tender nodular lumps with a typical manifestation of EN over arms and shins (Fig. 1). The conjunctiva was hyperemic. Heart and lungs had normal auscultation.

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Hepatosplenomegaly and lymphadenopathy were not observed. The complete blood count showed an increase in white blood cell counts predominantly consisting of polymorphonuclear cells and a platelet count of 112 000. Also, other laboratory findings included hemoglobin (11 mg/dl), red blood cell (3.8 million/mm^3), serum creatinine (0.92 mg/dl), C-reactive protein (93 mg/dl) and blood urea (11 mg/dl). Liver enzymes were increased short of three times the normal limits. Urinalysis was normal. Considering the epidemiological demographic of the area and the patient's symptoms, treatment was started with 1 g of amp ceftriaxone twice a day. Also, additional tests such as polymerase chain reaction (PCR) were requested to detect infections with human immunodeficiency virus, hepatitis B and C, syphilis, *Brucella* and tuberculosis. The results of our patient's serum samples were confirmed by leptospirosis infection PCR. Urine analysis showed moderate proteinuria but no abnormality on microscopy or culture. Malaria rapid card test was negative. Rheumatologic studies such as antinuclear antibodies (ANA), anti-double stranded DNA (anti-dsDNA), rheumatoid factor (RF), anti-cyclic citrullinated peptide (anti-CCP) were negative, but leptospirosis immunoglobulin M and G and microscopic agglutination test (MAT titer $\geq$1:400) confirmed leptospirosis infection. No treatment was given for EN, and due to the treatment of leptospirosis, which was the primary disease, EN disappeared. Treatment was continued for a week. The patient underwent a 2-week follow-up; platelet count and liver enzymes were reduced to normal range, and skin lesions disappeared.

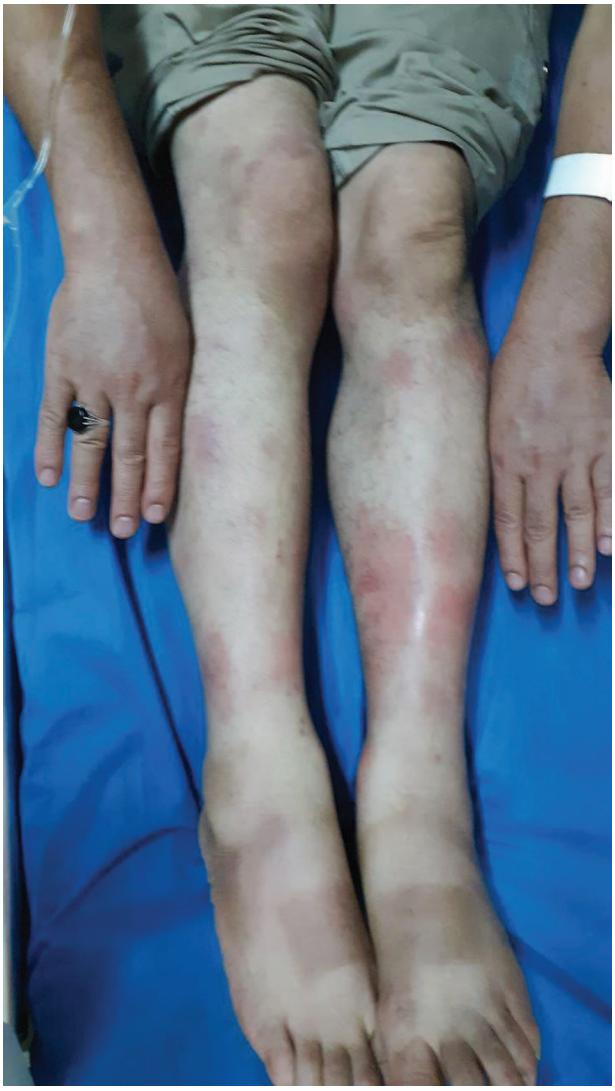

Figure 1: Clinical image of erythema nodosum on arms and legs.

DISCUSSION

Leptospirosis is one of the most common zoonotic diseases between human and animals with a high prevalence in the world. Leptospirosis is a work-related disease in developing countries such as Iran and occurs more often in farmers, ranchers, slaughterhouse staff, butchers and fishermen in the warm seasons. In developed countries, leisure activities such as swimming, water skiing, and other water sports and camping in contaminated areas are among the ways of leptospirosis contamination [6]. The annual mortality rate of patients with leptospirosis is reported to be ~1 in 100 000 [7]. The highest rate of infection occurred in crowded urban areas with low economic level and in rural areas. Due to the appropriate conditions for the disease in the northern parts of Iran, many patients are admitted to the infectious wards of hospitals in this area with clinical diagnosis of leptospirosis [1,6]. Typically, leptospirosis has two phases so that, after the acute spirochete phase, the immune phase emerges. Leptospirosis produces a wide range of clinical manifestations ranging from asymptomatic infection to flu-like symptoms and Weill's syndrome with fever, jaundice, hemorrhagic episodes, myocarditis, aseptic meningitis and nephritis. About 10% of infected people were present with clinical manifestations of fever, headache, muscle pain and gastrointestinal involvement [6]. About 10 to 15% of people presenting with clinical manifestations may develop severe leptospirosis associated with multi-organ involvement such as liver, lung and heart, and the risk of death is high. In some studies, unusual symptoms and manifestations of leptospirosis such as neck stiffness, tachycardia and uveitis have been observed due to involvement of the musculoskeletal, cardiovascular and ocular system, respectively [8]. The skin involvement is macular papule and patchy, localized or extensive erythematosus plaque as well as secondary petechia and purpura that lead to vascular involvement just like EN [3,7,9]. Since leptospirosis does not have any specific pathognomonic symptoms to make clinical diagnosis possible, therefore, its laboratory diagnosis is of importance. Laboratory diagnosis of the disease is performed in a variety of ways, including finding antibodies by serological methods, culturing bacteria in the urine or tissue and demonstrating the presence of leptospira in the tissue using antibodies conjugated with fluorescent materials. Leptospira can also be proved by other methods such as PCR and enzyme-linked immunosorbent assay (ELISA). The gold standard in the diagnosis of this disease is the MAT [2]. In our case, a middle-aged man complained of persistent fever from 4 days ago with headache, myalgia, nausea and with erythematous lesions and rigid tender, which was a typical form of EN. He had a history of swimming in a forest pond. In a similar case reported in 1977, a 12-year-old patient presented with the same symptoms and skin rashes on four limbs that reported a history of swimming in the lake [10]. Symptoms of these two patients were typical of leptospirosis, but the skin rash was significant in all four limbs, and the incidence is very rare [4]. According to the high prevalence of leptospirosis and suspicion of infection, MAT and ELISA tests were requested, which resulted in a definitive diagnosis of leptospirosis and

treatment was initiated for him. The prevalence of EN as an early manifestation of leptospirosis is very rare, and after searching scientific sources, only three articles reported EN in four limbs as the primary manifestation of the disease [4, 10].

CONCLUSION

Leptospirosis is a bacteremia that may occur with various systemic manifestations of vascular involvement. Given the high prevalence of leptospirosis in humid regions, including northern parts of Iran, as well as the wide range of symptoms, recognizing the rare manifestations of this disease is essential for timely diagnosis and prevents its dangerous complications and mortality.

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CONFLICT OF INTEREST STATEMENT

None declared.

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None.

CONSENT

Written informed consent was obtained from the patient for the publication of this case report as well as accompanying images. A copy of the written consent is available for review by the Editor-in-Chief of this journal.

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