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SALMONELLA OSTEOMYELITIS AND SOFT TISSUE ABSCESS SECONDARY TO CORTICOSTEROID TREATMENT

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ABSTRACT

Salmonella osteomyelitis is a rare clinical entity and is mostly seen in patients with sickle cell anemia and other various underlying conditions such as diabetes mellitus, systemic lupus erythematosus, lymphoma, or immunosuppressive drug use. We report a case of osteomyelitis and soft tissue abscess due to *Salmonella enterica subsp. enterica serovar Enteritidis* that developed during the course of corticosteroid therapy in an otherwise healthy patient. The patient was treated with radical surgical debridement and long-term combined antibiotic therapy.

Key Words: *Salmonella enteritidis*, Osteomyelitis, Abscess, Corticosteroid.

KORTİKOSTEROİD TEDAVİSİNE SEKONDER GELİŞEN SALMONELLA OSTEOMYELİTİ VE YUMUŞAK DOKU APSESİ

ÖZ

Salmonella osteomyeliti nadir görülen bir klinik tablodur ve genellikle orak hücreli anemi, diabetes mellitus, sistemik lupus eritematozus, lenfoma veya immünsupresif ilaç kullanımı olanlarda ortaya çıkar. Burada daha önceden sağlıklı olan bir hastada, kortikosteroid tedavisi alırken *Salmonella enterica subsp. enterica serovar Enteritidis'*e bağlı gelişen bir osteomyelit ve yumuşak doku apsesini sunmayı amaçladık. Hastaya radikal cerrahi debridman uygulanmış ve uzun süreli kombine antibiyotik tedavisi kullanılarak tedavi edilmiştir.

Anahtar Kelimeler: *Salmonella enteritidis*, Osteomyelit, Apse, Kortikosteroid.

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INTRODUCTION

Salmonella infection can cause three different clinical syndromes, i.e. acute gastroenteritis, enteric fever, and bacteremia with or without focal extraintestinal infection. Localized organ infections occur in 5%-10% of salmonella bacteremia cases (1). Salmonella osteomyelitis is not considered in differential diagnosis in clinical practice because it usually occurs in children with sickle cell anemia and in adults with immunosuppression. The most common serotypes isolated from salmonella osteomyelitis are *S. typhi, S. typhimurium, S. enteritidis,* and *S. virchow* (2-4). We describe here a case of osteomyelitis caused by S. enteritidis that developed during the course of corticosteroid therapy in an otherwise healthy patient.

CASE REPORT

A 63-year-old female patient that presented with fever and pain in the left leg was admitted to hospital. She had received corticosteroid therapy for the previous 10 months for interstitial fibrosis. On admission, fever (38.8 °C), hypotension, tachycardia, coldness in the left, and weakening of peripheral pulses were detected upon physical examination. Blood tests showed hemoglobin 8.9 g/dl, white blood cell count 9300/mm3, thrombocyte count 615,000/mm3, ESR 135 mm/h, and C-reactive protein level 120 mg/dl. Other laboratory tests were normal. She was considered to have septic thrombophlebitis and so ampicillin-sulbactam 2 g IV four times was initiated. Although she had no history for the symptoms of enteric fever, the Gruber-Widal TO test was found positive at 1:800 titer. Therefore, ampicillin-sulbactam therapy was discontinued and ciprofloxacin 400 mg twice a day was started.

On the sixth day, a bone scintigraphy test was performed because the patient was suffering from upper leg pain. There was a marked involvement and aseptic necrosis of the left acetabulum and an increased focal irregular activity involvement in her left femur, 1/3 proximal and medial zones. Magnetic resonance imaging showed a collection zone with peripheral contrast involvement in the anteromedial neighbourhood of the left femur proximal diaphyseal area. Approximately 30 ml of abscess material was drained with USG-guided percutaneous needle aspiration. Polymerase chain reactions for *Brucella* and *Mycobacterium tuberculosis* were negative. A pus swab from the drained material grew *Salmonella enterica subsp. enterica serovar Enteritidis*. The strain was sensitive to ampicillin, ciprofloxacin, ceftriaxone, chloramphenicol, and trimethoprim-sulphamethoxazole. Blood cultures yielded no bacteria. Cefepime 1 g IV three times was added to the therapy. The body temperature of the patient returned to normal. In the follow-up studies, the Gruber-Widal test was negative. The abscess lesion was removed by surgical debridement. No bacteria grew from the abscess material. Pathological examination of the specimen revealed inflammatory granulation tissue characterized by foreign body giant cells. The patient was recommended a bilateral hip prosthesis

after the osteomyelitis was cured. She, however, refused the recommended surgery and was discharged from the hospital. Just before she was discharged from the hospital, she developed a skin rash. Thus, the cefepime and ciprofloxacin IV treatment was replaced with oral trimethoprim-sulphamethoxazole (800/160 mg twice a day) and ampicillin (1 g four times a day) therapy on the 28th day. Subsequently, via a telephone interview, it was learned that the patient had undergone a prosthesis operation and was recovering well without recurrence of the infection.

DISCUSSION

Salmonella osteomyelitis is rarely seen, constituting 0.8%-3.3% of all salmonella infections, and only 0.45% of all types of osteomyelitis (3). Salmonella osteomyelitis is mostly seen in hemoglobinopathies such as sickle cell anemia and it remains a significant cause of morbidity and mortality in this population (1,5). Furthermore, salmonella osteomyelitis is also seen in patients who have diabetes mellitus, systemic lupus erythematosus, lymphoma, liver and cardiovascular system disorders, surgery, or trauma (2). In addition, patients who are being treated with antilymphocytic globulin because of aplastic anemia, corticosteroids, antibacterials, antifungals, and antituberculosis drugs are very susceptible to salmonella osteomyelitis (6,7). In our case, the long-term corticosteroid intake seemed to predispose the patient to salmonella osteomyelitis.

The diagnosis of salmonella osteomyelitis is difficult. A biopsy culture from abscess material is important in the differential diagnosis (7-9). Blood culture is positive in 25%-30% of salmonella osteomyelitis patients. When the blood cultures are negative, an aspiration or biopsy taken from the bone marrow would be very valuable in the diagnosis. The Widal test was positive in our case, but it is not a definite diagnostic test as titers can be raised due to prior exposure or the test may be negative in some cases (3). Therefore, the growth of Salmonella microorganisms on culture provides a definitive diagnosis. In our case, at the beginning, we considered salmonella infection since the Widal test was positive. The diagnosis was confirmed by culture obtained from biopsy material. Salmonella enteritidis was isolated from the specimen.

The diaphyseal area of long bones, especially the femur and humerus, is the most common place involved in patients with sickle cell anemia (3). Salmonella osteomyelitis is also seen in the vertebral bones, ribs, pelvis, and skull (2,8,10,11). Multiple bone involvement was reported in 15% of patients (3,8).

The treatment of salmonella osteomyelitis is difficult. No randomized or case-control studies are available so far in the literature. There are no standardized antibacterial therapy regimens or surgical procedures. Chloramphenicol, third generation cephalosporins, and quinolones are the most commonly used antimicrobials (11). However, treatment failure with quinolones may occur, and it is associated with low-dose oral therapy or with administration to patients with undrained abscesses or osteomyelitis, conditions in which antimicrobial penetration may be poor (1).

Combined antibiotic therapy should be given for at least 4 weeks in cases not responding to the treatment. Santos and Sapico (12) have recommended the duration of therapy as 2 months in uncomplicated vertebrae osteomyelitis. In chronic cases, antibiotic therapy should be used for a minimum of 3 months (12). Surgery must be considered when the patient's complaints continue, or when they are unresponsive to antimicrobial therapy (1,13). Surgical drainage is usually inadequate and radical debridement of the lesion is required. In our case, the complaints of the patient were not resolved in spite of long-term combined antibiotic therapy and drainage. Subsequently, the abscess lesion was radically debrided and treated with combined antibiotic therapy and the symptoms of the patient improved.

In conclusion, the diagnosis and treatment of salmonella osteomyelitis are difficult. Invasive diagnostic procedures may be required, especially in the absence of positive blood cultures. Long-term combined antibiotic therapy and radical surgical debridement should be performed in cases unresponsive to antimicrobial therapy.

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