Brucella arthritis of the hip: Case report

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Abstract

Brucellosis is a zoonotic and systemic infectious disease, which constitutes a public healthy problem in China. Therefore, we present a case of Brucella arthritis of the hip, and investigate the role of radiological manifestations, especially magnetic resonance imaging (MRI) findings, in the diagnosis of Brucella osteoarthritis.

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1. Introduction

Brucellosis is a rare zoonotic infectious disease characterized by relapsing fever, hepatosplenomegaly, osteoarticular complications and so on. In clinical practice, it is difficult to diagnose due to the non-specific clinical and radiological manifestations. Therefore, we present a 57-year-old man suffered from Brucella arthritis of the hip and analyze the clinical and radiological findings in order to improve the accuracy of the diagnosis of this disease.

2. Case report

The patient complained of recurrent pain on his left hip for one year and a half, which induced a limit of movement for half a year. The patient walked lame and could not be fully relieved unless after a long rest for over 20 min. The clinical symptoms included: sweating at night but with no fever; no neurologic symptoms caused by brucella, e.g. dizziness, headache, malaise, and transient disturbance; Aspiration, pulse rate and blood pressure were normal; Weight loss was not obvious. The patient had a history of contacting with goats for over one year and he had diabetes for many years.

The physical examination findings were as follows: his left hip was positioned flexion at 15°; the movement including active and passive internal rotation, external rotation, abduction and adduction activity was limited ranged from 15° to 80°; muscle strength grade was IV; The Gaenslen examination, longitudinal percussion pain of left lower limbs and percussion pain of left trochanter were positive.

Routine biochemical tests showed that white blood cell (WBC) count (9.1 G/L) and the proportion of all kinds of WBC were within normal range, erythrocyte sedimentation rate (ESR) sped up (36 mm/h), C-reactive protein (CRP) elevated (41.2 mg/L), rheumatoid factor and antistreptolysin O level were normal, blood urea nitrogen (8.5 mmol/L) and R-glutamine ammonia transpeptidase (71U/L) slightly increased.

X-ray examination showed that the left caput femoris flatted, there were osteosclerosis with small cystic hypodensity zones in sclerotin and joint space narrowed.

Transverse CT scan demonstrated that the left caput femoris deformed and cortex get thinned. Some multiple cystic hypodensity zones, local erosions and sclerotic margins were...
observed in the left acetabulum fossa and caput femoris. There were small bony erosive defects in the femoral cortex. In addition, joint space of the left hip narrowed. Multiple hypodensity lesions and calcification were observed in the soft tissue surrounding the joint capsule and femoral trochanter. MRI showed that the left acetabulum fossa and caput femoris were abnormal in size and configuration. Some abnormal lesions was observed in the left iliac, femoral head and neck, obturator internus muscle and gluteus minimus muscle, with the left caput femoris deformation. The lesions in the left ilium, femoral head and neck, obturator internus muscle and obturator externus muscle, iliopsoas muscle and gluteus minimus muscle display marked enhancement on coronary FS-T1WI.

To sum up, the radiological findings supported the diagnosis of infectious disease in the left hip. Though biopsy showed that fibrous tissue in bony marrow cavity had hyperplasia. After more than 4 days (100 h), the bacteria culture of synovial fluid from the left hip confirmed that the pathogenic bacteria were brucella melitensis. In conclusion, this disease was diagnosed as brucella arthritis of the hip.

3. Discussion

Brucellosis is a zoonotic and systemic infectious disease. Brucella had four types including Brucella melitensis, Brucella bovis, Brucella suis, Brucella canis. After inoculation, signs and symptoms may emerge in a period ranged from 2–8 weeks to 5 years, while the earliest radiological signs may appear 12 weeks or more after occurrence of symptom [1–3].

Brucellosis usually invaded the liver, spleen, lymph nodes and musculoskeletal system, even marrow-rich bone tissue. For the musculoskeletal system, the most common osteo-articular complications are arthritis of large joints, spondylitis, bursitis, tenosynovitis and osteomyelitis [4]. The common involved location, including spondylodiscitis, sacroiliitis, peripheral arthritis such as knee and ankle arthritis, vary among different countries [3–9]. In China, The data about brucella spondylitis and monoarthritis of knee or hip joint are rare [10–12].

In this case, radiological manifestations were as follows: (1) signs of the arthritis of hip were found, including bone sclerosis around the small irregular cystic bony destruction and the joint space narrowing. (2) several characteristics of infection were found as well, like osteomyelitis, extensive soft tissue exudative inflammation and the like, but there was no granulomas or abscess that could be formed sometimes. With regard to the bony changes, CT is superior to X-ray examination because CT can show cystic bony erosion, sclerotic margin and even the detection of small foci more clearly. Compared with CT and X-ray, MRI has greater advantages regarding showing the lesions in adjacent soft tissue. In particular, diffusion weighted imaging is more sensitive in showing lesions and more valuable in identifying the resent from the chronic [3].

Brucella arthritis of the hip should be differentiated from other types of hip arthritis, such as tuberculosis arthritis, senile osteoarthritis, ischemic necrosis of caput femoris, etc. In a
typical tuberculous arthritis of the hip, destruction of bone and involvement of adjacent soft tissue are more aggressive, and sometimes there are sequestra and tuberculous abscesses. In senile osteoarthritis cystic subchondral destruction, multiple sclerosis, osteophyte formation and caput femoris collapses with displacement are often seen. And in ischemic necrosis of caput femoris, the femoral head and neck fragmentation, cystic changes, bony absorption, sclerotic margin and osteophyte are often seen.

However, the diagnoses of Brucellosis is difficult because that there is no specific radiological findings. It is notable that the definitive diagnosis of this infection still depends on the isolation and culture of brucella spp. from synovial fluid [4,5] or serology [4]. But MRI play an important part in evaluating the extent and scopes of necrosis in bone and adjacent soft tissues because this technique can provide multiplanar images and great ability of showing the lesions in the soft tissue.

The recommended treatment protocol for brucellar arthritis is that the doxycycline combined with streptomycin or rifampin is administered for 6 weeks, and even more than two antimicrobial agents [5].

In recent years, the incidence of brucellosis is on the increase not only in pasturing regions, such as Xinjiang, Inner Mongolia, but also in the urban regions due to the increasing consumption of un-pasteurized milk and dairy products. Therefore, when physicians find similar radiographic manifestations in patients, this disease should be suspected and microbiological examination should be advised.

References