

“It must be painful to walk”——A case of hip pathology from Central Plains, West Han Dynasty (3rd Century BCE – 1st Century CE), China

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Introduction

Several conditions could lead to hip pathologies, such as tuberculosis arthritis, leprosy, trauma, developmental dysplasia of the hip, Legg-Calve-Perthes disease, Slipped capital femoral epiphysis, and septic arthritis of the hip. Among the mentioned conditions, septic arthritis of the hip is less commonly seen in archaeological contexts. This case presents a possible case of septic arthritis of the hip on an adult male from Central Plains, China, who used to live in the Western Han Dynasty.

Case Description

The specimen of interest, coded as M142, was excavated from Dapuzi Cemetery, Xi'an, China (Fig 1). The skeleton is 40% complete with several fragments and cortical damage. With all the features for estimating age-at-death broken or not preserved, we



Fig 1. The location of the cemetery

could only infer that this specimen was a male in his adulthood. Though with unideal preservation, the pathologies at the left hip notably presents a deformed acetabulum with both osteolytic and osteoblastic appearance (Fig 2-4). The altered contour and eburnation with grooving also suggest severe osteoarthritis. Perforation caused by pus formation could also be observed on the joint surface (Figure 4). Correspondingly, the left proximal femur presents similar pathologies to the left acetabulum. Notably, the left femoral shaft shows a reduced circumference.



Fig 2. The pelvic and femur shafts

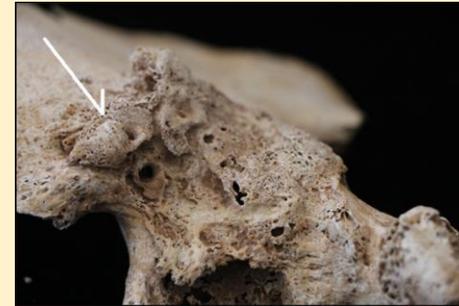


Fig 3. A close-up to the left acetabulum. The arrow indicates the grooving.



Fig 4. A close-up to the left proximal femur

What did M142 have?

The porous appearance and pus-like formation indicate the infection-related condition. We exclude leprosy and tuberculosis arthritis as tuberculosis arthritis would cause much more destructions on the joint. Leprosy is also excluded since the features do not match. We also exclude rheumatoid arthritis and gout, since these two either effect symmetrically or feet and hand are more commonly affected. Both are not seen on M142. We think the most compatible diagnosis would be septic arthritis.

Unfortunately, the cause for the septic arthritis remains unclear due to the incompleteness of the skeleton. It could be trauma, dysplasia of the hip, or septic arthritis of the hip, which is commonly seen in infants in modern clinics. No matter what conditions, the septic arthritis lead M142 to a painful experience for daily activities (e.g., walking), which could be seen from the thin shaft of the left femoral and the severe osteoarthritis appearance.

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