

Unidentified Remains with Extensive Bone Disease without a Clear Diagnosis

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Abstract : Skeletal differential diagnosis is essential in forensic anthropology in order to differentiate skeletal trauma from normal osseous variation and pathological processes. Thus, part of forensic anthropological field is differentiate skeletal criminal injuries from the normal skeletal variation (bone fusion or nonunion, transitional vertebrae and other non-metric traits), non-traumatic skeletal pathology (myositis ossificans, arthritis, bone metastasis, osteomyelitis) from traumatic skeletal pathology (myositis ossificans traumatic) avoiding misdiagnosis. This case shows the importance of effective pathological diagnosis in order to accelerate the identification process of skeletonized human remains. THE CASE: An unidentified skeletal remains at the medico legal institute Nina Rodrigues-Salvador, of a male young adult (29 to 40 years estimated) showing a massive heterotopic ossification on its right tibia at upper epiphysis and adjacent articular femur surface; an extensive ossification on the right clavicle (at the sternal extremity) also presenting an heterotopic ossification at right scapulae (upper third of scapulae lateral margin and infraglenoid tubercule) and at the head of right humerus at the shoulder joint area. Curiously, this case also shows an unusual porosity in certain vertebrae's body and in some tarsal and carpal bones. Likewise, his left fifth metacarpal bones (right and left) showed a healed fracture which led both bones distorted. Based on identification, of pathological conditions in human skeletal remains literature and protocols these alterations can be misdiagnosed and this skeleton may present more than one pathological process. The anthropological forensic lab at Medico-legal Institute Nina Rodrigues in Salvador (Brazil) adopts international protocols to ancestry, sex, age and stature estimations, also implemented well-established conventions to identify pathological disease and skeletal alterations. The most compatible diagnosis for this case is hematogenous osteomyelitis due to following findings: 1: the healed fracture pattern at the clavicle showing a cloaca which is a pathognomonic for osteomyelitis; 2: the metacarpals healed fracture does not present cloaca although they developed a periosteal formation. 3: the superior articular surface of the right tibia shows an extensive inflammatory healing process that extends to adjacent femur articular surface showing some cloaca at tibia bone disease. 4: the uncommon porosities may result from hematogenous infectious process. The fractures probably have occurred in a different moments based on the healing process; the tibia injury is more extensive and has not been reorganized, while metacarpals and clavicle fracture is properly healed. We suggest that the clavicle and tibia's fractures were infected by an existing infectious disease (syphilis, tuberculosis, brucellosis) or an existing syndrome (Gorham's disease), which led to the development of osteomyelitis. This hypothesis is supported by the fact that different bones are affected in diverse levels. Like the metacarpals that do not show the cloaca, but then a periosteal new bone formation; then the unusual porosities do not show a classical osteoarthritic processes findings as the marginal osteophyte, pitting and new bone formation, they just show an erosive process without bone formation or osteophyte. To confirm and prove our hypothesis we are working on different clinical approaches like DNA, histopathology and other image exams to find the correct diagnostic.

Keywords : bone disease, forensic anthropology, hematogenous osteomyelitis, human identification, human remains

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