Case Report
Paget’s Disease of the Skull

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Abstract Paget’s disease is a chronic disorder of unknown etiology that mainly affects the elderly. It is characterized by focal areas of excessive osteoclastic bone resorption with associated increase in osteoblastic bone formation. Diagnosis is made commonly after performing radiological studies, especially bone scintigraphy. We report a patient with high levels of serum alkaline phosphatase that was diagnosed of Paget’s disease of the skull and treated with Alendronate.

Keywords Paget’s disease; skull; biphosphonate therapy

1 Introduction
Paget’s disease of bone, first described as osteitis deformans by Sir James Paget in 1877 [9], is a chronic disorder of unknown etiology that mainly affects the elderly. It is more common in males and has a strong genetic component [2,6,11]. It is thought to be caused by a slow virus infection and especially paramyxoviruses that have been postulated as the cause. At present, evidence favoring this issue is lacking [10]. It is characterized by focal areas of excessive osteoclastic bone resorption with associated increase in osteoblastic bone formation. This excessive bone metabolism results in bone expansion with structural weakness and may cause pain, deformity, and various complications. It affects approximately 4% of the population over the age of 55 [2]. There are important geographical differences in the prevalence of the disease, which is more common in the United Kingdom and countries with high frequency of British ancestry like Australia, New Zealand, and North America [3]. In contrast, the disease is very rare in Scandinavia, Africa, and Asia [3]. We report a patient with high levels of serum alkaline phosphatase (ALP) and asymptomatic disease of the skull.

2 Case report
A 59-year-old man was referred to our institution for study of high levels of serum ALP in January 2012. The patient was non-smoker and consumed 10 grams of alcohol daily. He had previous diagnosis of hypertension and hypercholesterolemia and was receiving simvastatin, amlodipine, and acetyl salicylic acid therapy. Three years before (2009), serum ALP was 1824 U/L (normal range 88–263 U/L) in a routine analysis. Several analyses performed afterwards revealed increased serum ALP concentrations ranging from 2539 U/L to 3184 U/L. He reported no symptoms. Physical exploration was normal. Serum biochemistry showed an ALP level of 3284 U/L. The remaining serum determinations were within normal limits, including levels of liver enzymes, intact PTH, phosphorus, 25-hydroxyvitamin-D, serum protein electrophoresis, and levels of tumor markers (CEA and PSA). Serum levels of bone ALP (monoclonal antibodies) were > 90 U/L (normal range 19–53 U/L). Serological tests for HCV, HBV, and HIV were negative. Radiographic studies of the pelvis and lumbar spine were normal. Bone scintigraphy using technetium-99 m diphosphonate showed intense and extensive tracer uptake affecting the entire skull, with the exception of the inferior maxillary bone (Figure 1). Alendronate 40 mg/d was started because of possible affection of skull base.

3 Discussion
Skull involvement in Paget’s disease occurs in 65%–70% of advanced polyostotic cases [1]. The occiput is the most common site of discomfort [1]. Patients often complain about

Figure 1: Antero-posterior view from bone scintigraphy showing intense technetium-99 m diphosphonate uptake affecting the skull except the inferior maxillary bone.
symptoms such as headache, vertigo, cranial nerve palsies, spinal cord compression or hearing loss, but in many cases the disease is asymptomatic. Isolated skull disease is less common and is asymptomatic in one fifth of patients [13]. When the skull is the only part of the body affected, fibrous dysplasia enters the differential diagnosis, although the latter typically occurs much earlier in life and frequently affects facial structures [12]. In cases with skull thickening, nerve and vessel compression may cause symptoms. Loss of hearing acuity occurs in approximately 50% of patients with skull involvement being, after headache, the most frequent symptom [7]. No hearing loss was reported by our patient. The genetic component is important in Paget’s disease. It has been reported that up to 15% to 20% of patients have a first degree relative with the disease [2]. Obtaining the family history of Paget’s disease of bone is important for the diagnosis and may avoid unnecessary explorations. No family history was found in our patient. The most important complication of Paget’s disease is the development of bone sarcoma. It occurs in up to 1% of patients and the risk increases in the long term [8]. On radiological exams, the skull may show characteristic features such as osteoporosis circumscripta or osteosclerosis with typical cotton wool appearance, as in the presented case. When needed, bone biopsy demonstrates the thickness and irregularity of bone trabeculae, in which the number of basophilic cement lines is significantly increased, thus forming the typical mosaic structure of pagetoid bone [5]. At present, bisphosphonates are the most useful therapy for Paget’s disease [4]. However, some patients do not respond to this therapy and others even develop therapy-related side effects that make close follow-up of these patients necessary [4].

References