Abstracts of the Scientific Awards of XXXIX COMU 2020 - Research Classified - Panels Award - Case Report

Bone Involvement in Gaucher Disease Type 1: a Differential Diagnosis of Multiple Fractures in a Young Patient. Case Report

Nicolas Yamada Tanigava, Nestor José de Souza Barreto Neto, André Silva Franco, Rosa Maria Rodrigues Pereira

Faculdade de Medicina FMUSP, Universidade de São Paulo, São Paulo, SP, BR

Gaucher disease type 1 (GD1) is a rare inherited disease caused by mutations in the GBA1 gene, which encodes the lysosomal enzyme glucocerebrosidase, leading to decreased enzyme activity and the consequential accumulation of its substrate, glucosylceramide, within macrophages. Bone involvement in GD1 may include avascular necrosis, bone infarcts, fragility fractures, lytic or sclerotic bone lesions and osteomyelitis. Bone pain can manifest as an acute and very painful bone crisis or a chronic pain that might vary in intensity, usually caused by fractures or avascular necrosis with progressive collapse of bone and joints. Hence, this report aims to describe a case of Gaucher disease type 1 and discuss its diagnosis, bone involvement and management, since late diagnosis or inadequate therapy can lead to clinical worsening, irreversible mobility impairment and increased morbidity. AGR, a 32-year-old male patient, was admitted to the Rheumatology Service with a previous history of diffuse bone pain, episodic hyperemia in the lower limbs since the age of 9 and two low-impact fractures. He had an initial non-confirmed diagnostic hypothesis of chronic recurrent multifocal osteomyelitis and was taking dipyrone and tramadol to reduce pain. His physical examination evinced overweight (body mass index: 29.7 kg/m2) and hepatosplenomegaly. Laboratory tests shown thrombocytopenia, with platelet count 103,000/mm3 (reference value [RV]: 140,000-450,000/mm3), serum phosphorus 4.7 mg/dL (RV: 2.7-4.5 mg/dL), C-reactive protein 88.8 mg/dL (RV: < 5 mg/dL) and ferritin 1336 ng/mL (RV: 30-400 ng/mL). Biochemical and bone turnover markers were normal, including serum total calcium and magnesium, parathyroid hormone, 25-OH vitamin D, alkaline phosphatase, procollagen type-I N-terminal propeptide and C-terminal telopeptide of type I collagen. Conventional radiographies and magnetic resonance imaging were performed and confirmed previous fractures in the right humerus and the right acetabulum. They also showed sclerotic lesions in the left femur and Erlenmeyer flask deformities in the distal femurs and the proximal tibias. Bone scintigraphy indicated a bone infarct area in the left tibia. Areal bone mineral density (BMD) evaluated by bone densitometry showed a left total femur Z-score of +4.3 and left femoral neck Z-score of +4.5. Differently, the bone microarchitecture and volumetric BMD, evaluated by a high-resolution peripheral quantitative computed tomography (HR-pQCT) at distal radius and distal tibia, demonstrated an impairment of cortical compartment with lower cortical thickness and lower cortical volumetric BMD, possibly contributing to the low-impact fractures. Considering the compatible radiological findings, associated with hepatosplenomegaly and thrombocytopenia, Gaucher disease type 1 became the major hypothesis. It was confirmed after enzymatic dosage, which showed low residual glucocerebrosidase activity and high serum chitotriosidase. Enzyme replacement therapy was started with taliglucerase alfa, a recombinant enzyme preparation that aims to supply the lacking glucocerebrosidase in lysosomes. After 6 months of treatment, patient reported a significant improvement in bone pain and general quality of life. Therefore, clinicians should be alert to young patients with multiple low-impact fractures and further evaluate other possible bone involvement, as GD1 may be a differential diagnosis. Since it needs specific treatment, early diagnosis can be crucial to avoid permanent bone damage and morbidity.

Keywords: Gaucher disease; Glucosylceramides; Enzyme replacement therapy; Bone remodeling.