

Clinical-Medical Image

Conventional Osteosarcoma of the Fibula

Safaa Choayb*, Siham Elhaddad, Olaia Chalh, Nazik Allali, and Latifa Chat

Pediatric Imaging Department, Pediatric Teaching Hospital-UM5-Rabat, Morocco



Figure 1: An anterior-posterior radiograph of the knee demonstrates an aggressive lesion with mixed lytic and sclerotic features involving the epiphyseal and metadiaphyseal region of the left fibula, cortical destruction, and extension through soft tissue.



Figure 2: Coronal T1 post-contrast fat-saturated image of the proximal fibula shows a large aggressive destructive lesion with necrotic component showing lack of enhancement.

Clinical Image

A 12-year-old male child consults for pain in the leg, aching and swollen knee, with a palpable mass in the physical exam. A plain X-ray showed a large, ill-defined destructive bone lesion involving the epiphyseal and metadiaphyseal region of the left fibula with soft tissue swelling. MRI revealed an ill-defined destructive bone lesion of the fibula that extends to soft tissue. It was dark on T1, bright on T2 in both its intramedullary component and its extension to soft-tissue. The lesion showed enhancement on post-contrast sequences. No skip lesion was noted. Bone biopsy confirmed the diagnosis of conventional osteosarcoma.

Osteosarcoma is the most frequent primary malignant bone tumor in the pediatric population. It could be primary or secondary (underlying pathology which has undergone malignant degeneration), accounting for approximately 20% of all primary bone tumors. Primary are further sub-typed as intramedullary/central and surface osteosarcomas [1]. Conventional-intramedullary osteosarcoma is more common in the adolescent age group (10-25 years), it's usually located in the distal femur, proximal tibia, proximal humerus, and commonly metaphyseal. Histologically they are differentiated in osteoblastic (50%), chondroblastic (25%), and fibroblastic (25%) [2].

Plain film is the first study when a bone mass is discovered on the physical exam, it shows a large lesion with aggressive features with bone destruction, cortical breakthrough, aggressive periosteal reaction "Sunburst" and "Codman's triangle" configuration, an ill-defined "cloud-like" osseous lesion, and a soft-tissue mass. [3] MRI plays an important role in the diagnostic. In a highly dense matrix, the signal will be low in every sequence. If less dense there will be a low heterogeneous signal on T1 and a high heterogeneous signal on T2 [2]. MRI helps to define the extension inside and outside the bone, joint surface, vessel encasement, physis crossing, and determine SKIP lesions. [3] Metastases are common, with hematogenous spread to the lungs (80%) or bone and lymphatic spread locally [2] (Figures 1 and 2).

Keywords: Intramedullary osteosarcoma; Conventional osteosarcoma; Pediatric bone tumors

Declaration of Interests

The authors declare that they have no competing interests.

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*Corresponding author: Safaa Choayb, Pediatric Imaging Department, Pediatric Teaching Hospital-UM5-Rabat- Morocco, Tel: 0690294040; E-mail: choayb.safaa@gmail.com

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