

## IMAGING GAMUT

# Multifocal osteomyelitis on bone scan performed for mandibular mass with uncertain malignancy

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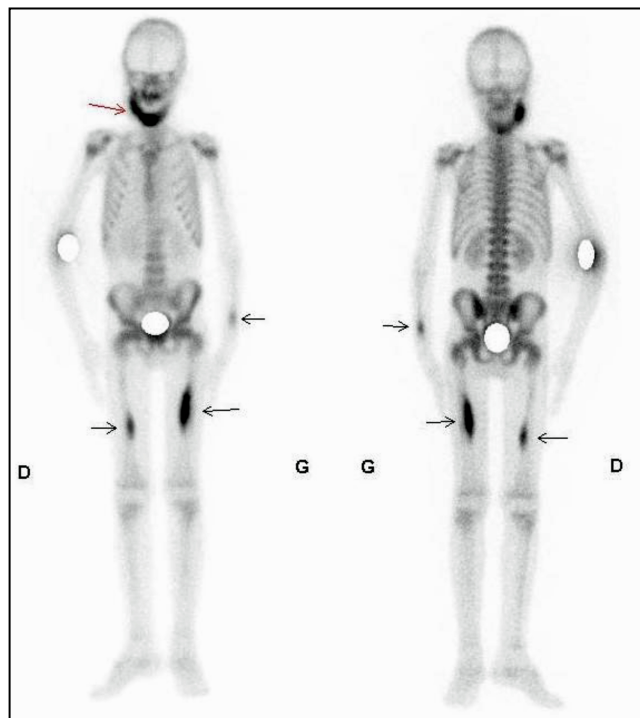
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**Key words:** Osteomyelitis, Bone scan

**Background** A 10-years-old boy presented with a mandibular mass and pain in the right leg. The patient had suffered from a benign mandibular tumour, an ameloblastoma, which is a rare disorder of the jaw involving abnormal tissue growth. MRI centered on the right inferior member showed osteomyelitis in the right lower extremity involving the femoral diaphysis with a subperiosteal abscess. Bone scan with radiobiphosphonates was performed to investigate the possibility of bone metastases and to confirm the presence of musculoskeletal infection [1].

**Procedure** The Planar whole-body bone scan was performed in the anterior and posterior projections 3 hours after an injection of  $^{99m}\text{Tc}$ -hydroxymethylene diphosphate. Single-photon emission computed tomography (SPECT-CT) was additionally performed

to investigate the nature of the hot-spots documented on the whole-body bone scan.

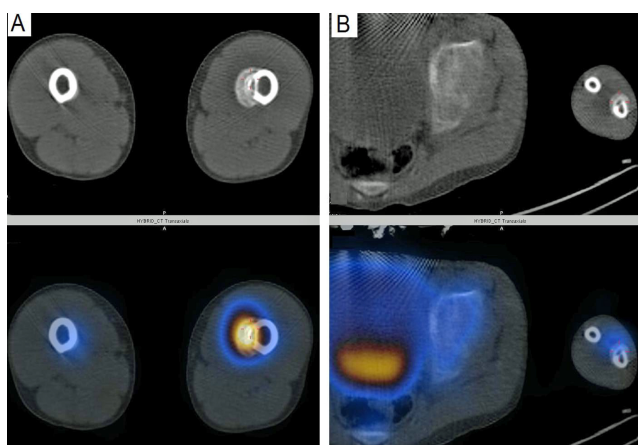


**Figure 1** Whole-body bone scan showing multifocal osteomyelitis of the lower third of the left forearm, the right and the left femoral diaphyses (black arrows). Note the intense uptake in the right mandible related to the mandibular mass with uncertain malignancy (red arrow)

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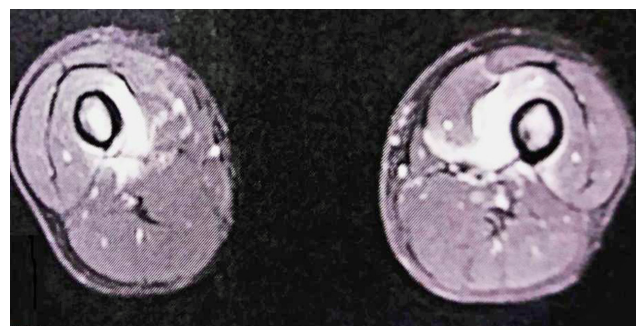
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**Findings** The whole-body bone scan images showed intense uptake in the right mandibular mass at the site of the known tumour (Figure 1). The bone scan additionally showed a linear area of intense uptake involving the medial cortex of the middle one-thirds of the left femoral shaft with a similar but smaller lesion seen at the junction of the middle and the lower thirds of the right femoral shaft medially. There was also a fusiform focus of increased activity seen two-thirds down the left ulnar shaft (Figure 1). These lesions were confirmed as multifocal osteomyelitis on the SPECT-CT scan, which showed subperiosteal abscesses in these locations (Figure 2).

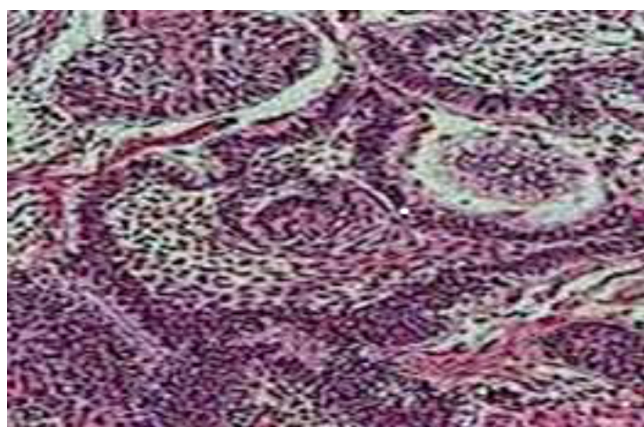


**Figure 2** (A) SPECT / CT centered on the left femoral diaphysis in transaxial sections showing intense uptake related to osteomyelitis with subperiosteal abscess. (B) SPECT / CT centered on of the left forearm showing uptake in the left ulna related to another focus of osteomyelitis with subperiosteal abscess

**Conclusion** The bone scan findings were consistent with multifocal osteomyelitis, of the lower third of the left forearm, the right and the left femoral diaphyseal with subperiosteal abscesses. SPECT-CT has also eliminated septic arthritis and possibility of fractures. These diagnoses were confirmed by MRI acquisition centered on the two femoral diaphyseal (Figure 3). The patient was taken for incision and drainage and was also treated with intravenous antibiotics.



**Figure 3** MRI image in axial section showing the bilateral diaphyseal osteomyelitis of the two femora with hypertintense subperiosteal abscesses



**Figure 4** Histological section from the right mandibular biopsy showing, on a haemorrhagic and inflammatory background, a vascularized loose fibroblast appearance of tumour proliferation with atypical lobular provision cubic coating (appearances compatible with mandibular ameloblastoma)

The histologically confirmed mandibular mass, an ameloblastoma, also required surgical treatment (Figure 4).

**Comments** 3-phase bone scintigraphy with radiobiphosphonates is particularly recommended for the diagnosis of multifocal osteomyelitis and septic arthritis [2]. Hybrid imaging (SPECT-CT) is useful in confirming the clinical diagnosis of osteomyelitis and also

provides essential information on the site and extent of the infection, which helps the clinician in planning medical and surgical treatment [3].

## References

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