VIA MEDICA

Nuclear Medicine Review 2002
Vol. 5, No. 1, pp. 67–68

ISSN 1506–9680

Young patient with wrist pain

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A twenty-one-year-old woman presented with left wrist pain for two years. On physical examination she had local tenderness, but no swelling or redness. She had no other medical problems. A radiographic examination (Fig. 1) showed periosteal thickening with underlying sclerosis in the medial aspect of the distal left radial metaphysis. The radiologist thought it might represent osteomyelitis and a Tc99m-HMPAO white blood cell scan and a bone scan were ordered. The white blood cell scan was negative and the three-phase bone scan is shown below (Fig. 2, 3 and 4, marker indicates the right side).

Blood flow and blood pool images showed no significant abnormalities.

On delayed images there was a small focus of markedly increased tracer uptake, surrounded by a larger area of increased, but less intense uptake, in the medial portion of the distal end of the left radius.

A CT scan (Fig. 5) showed a focal area of sclerosis with radiolucent center in the distal left radius corresponding to the bone scan lesion. The lesion was resected and pathology exam confirmed the diagnosis.

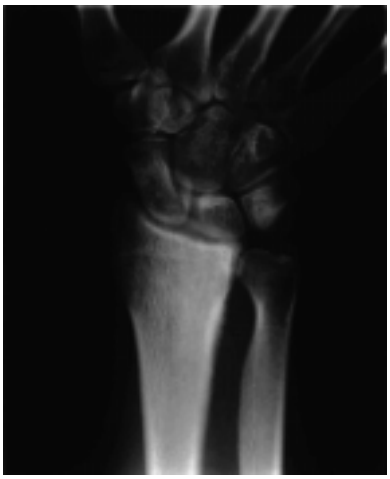

Figure 1. Radiograph of the left wrist.

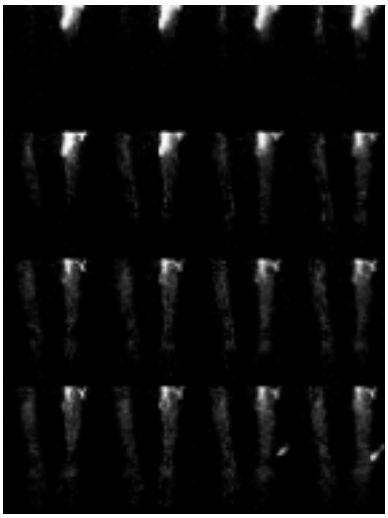

Figure 2. Three phase bone scan of the wrists — blood flow images.

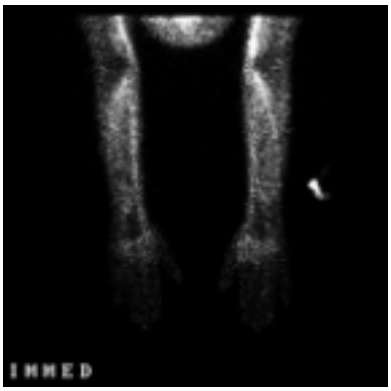

Figure 3. Three phase bone scan of the wrists — blood pool images.

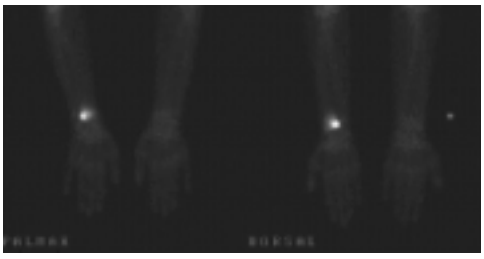

Figure 4. Three phase bone scan of the wrists — delayed images at three hours post injection.

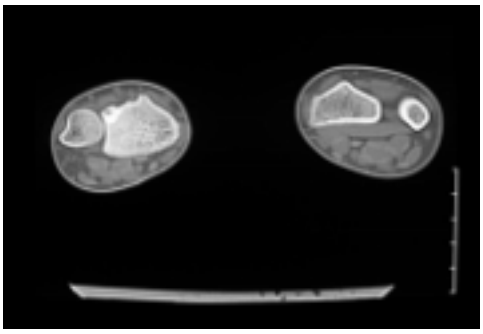

Figure 5. CT scan showed a focal area of sclerosis with radiolucent center in the distal left radius, corresponding to the bone scan lesion.

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What was the diagnosis?

Nuclear Medicine Review 2002, Vol. 5, No. 1

The answer to this question is: diagnosis – Osteoid Osteoma

Osteoid osteoma is a benign osteogenic tumour, accounting for approximately 10% of benign bone tumours. It usually occurs in the second and third decades of life and is more common in males. It typically arises in the cortex of the long bones, most often in the femur or tibia but can occur in any bone. A nocturnal pain relieved by aspirin is the classic symptom of osteoid osteoma. The most typical radiographic appearance is a cortically based sclerotic lesion in a long bone with a small central lucency called a nidus. The nidus, however, is often not visible and the amount of sclerosis is variable. Radiographic evaluation is especially difficult for lesions located in the spine, small bones or adjacent to the joints. CT may be helpful in demonstrating the nidus and it allows for a more precise localisation of the lesion. Both X-ray and CT appearance can be sometimes confused with osteomyelitis. Bone scan is very useful in difficult cases of osteoid osteoma. It is very sensitive and a normal bone scan effectively rules out the diagnosis of osteoid osteoma. The typical bone scan appearance is a small round area of very high tracer uptake corresponding to the nidus, surrounded by an area of increased, but less intense uptake (double density sign). Osteoid osteomas typically are hyperaemic, and have increased uptake on blood flow and blood pool images. This, however, was not seen in the case presented above. Osteoid osteomas are cured by surgical resection, CT guided resection or percutaneous radio-frequency ablation. Occasionally a hand-held gamma counter is used for intraoperative localisation of the lesion.

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