Tc-99m MIBI uptake in bone marrow

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Introduction
Primary hyperparathyroidism ensues from excess parathyroid hormone production from a parathyroid adenoma (85% to 90%), multigland hyperplasia (9% to 15%), or carcinoma (<1%) (1-3). Technetium-99m methoxyisobutylisonitrile (Tc-99m MIBI) as a parathyroid imaging agent has been used successfully in evaluation of the parathyroid adenoma and hyperplasia. MIBI has excellent sensitivity and specificity (>95% respectively) in parathyroid adenoma detection (1, 4).

Case report
We performed parathyroid scintigraphy in a 57-year-old man with hyperparathyroidism and nephrolithiasis. Bilateral sternoclaviculer joint Tc-99m MIBI uptake was seen in early and late pinhole images. In addition, we observed homogeneous, diffuse mildly increased skeletal uptake in the sternum and thoracic spine on Tc-99m MIBI imaging. These findings were evaluated as bone and/or bone marrow uptake.

Key words: Tc-99m MIBI, Bone Marrow uptake

Fig 1. There is increased activity bilaterally sternoclaviculer joint on Tc-99m MIBI early and late pinhole parathyroid imaging.
seen obviously (Fig.1). However, in the mediastinal image and posterior thorax images we observed homogenously diffuse mild MIBI activity in the sternum and thoracic spine (Fig.2). These findings were evaluated as bone and/or bone marrow uptake. D vitamin deficiency was found in this patient and oral vitamin D was prescribed.

Discussion

Bone marrow uptake of Tc-99m MIBI was shown in numerous studies in the literature (5-11). But there are different explanations such as increased plasmocytes, erythrocytes, megakaryocytes and radiopharmaceutical labeling problem as colloid formation for the bone marrow uptake mechanism of Tc-99m MIBI. Jonsson et al studied the bone marrow distribution of Tc-99m MIBI in 44 patients with suspected hyperparathyroidism. They have demonstrated skeletal activity in 21 (48%) patients. Complementary mouse experiments confirmed the skeletal uptake of Tc-99m MIBI, where most of activity is taken up by the red bone marrow and weak diffuse skeletal accumulation of Tc-99m MIBI may be a normal finding (5).

In our case, we observed Tc-99m MIBI uptake as a pitfall in parathyroid scintigraphy.

**Fig 2.** Mediastinal image (A) shows homogenously diffuse mild sternal and bilaterally sternoclaviculer joint Tc-99m MIBI uptake (+ signs: cartilago cricoidae and incisura jugularis). Posterior thorax image (B) showed homogenously diffuse mild Tc-99m MIBI activity at the thoracic spine.

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