

Incidental thyroid Tc-99m methylene diphosphonate (MDP) uptake in a patient affected by polynodular goiter at bone scintigraphy

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Abstract

Incidental extraosseous uptake seen on Tc-99m methylene diphosphonate (MDP) bone scan is not unusual. We discuss here an incidental thyroid uptake in a 55-year-old female patient affected by breast cancer treated by total mastectomy, who underwent total body bone scintigraphy as a staging study. In the positron emission tomography era, traditional nuclear medicine imaging still has an important role in the diagnostic field, and incidental findings may be very useful in patient management, revealing unknown diseases and allowing correct therapeutic decisions.

Key words: bone scintigraphy, thyroid uptake

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Introduction

Incidental extraosseous uptake seen on Tc-99m methylene diphosphonate (MDP) bone scan is not unusual [1–2] and fre-

quently is of clinical significance, often revealing unknown diseases.

Case report

In this paper we report incidental thyroid uptake in a 55-year-old female patient affected by breast cancer treated by total mastectomy, who underwent total body bone scintigraphy as a staging study. Bone scintigraphy was negative for metastatic pathologic uptake but revealed an equivocal high uptake at the base of the neck, more visible in the anterior view (Figures 1A–C). When asked about thyroid disease the patient reported a diagnosis of hyperfunctioning thyroid goiter treated with methimazole 10 years previously. Tc-99m-pertechnetate scintigraphy confirmed the presence of thyroid multinodular goiter with areas of faint and high uptake probably due to the coexistence of hypo- and hyperfunctioning nodules (Figures 1D–F). Ultrasonography (US) confirmed the presence of multinodular goiter with calcification, and thyroid hormone dosage revealed a mild hyperthyroidism. The patient has started methimazole therapy and it was suggested that she contact a surgeon.

Discussion

There are reported many cases in literature of incidental extraosseous Tc-99m methylene diphosphonate (MDP) bone uptake. The most frequent findings are related to the genitourinary system, such as obstructed ureter, hydronephrosis, and renal ptosis or to soft tissue, such as heterotopic ossification or myositis and osteogenic sarcoma [3]; accumulation of Tc-99m-MDP is also described in pericardial metastasis from breast cancer [4], breast cancer [3], malignant effusion at pleural space [3], and pulmonary metastases from Ewing's sarcoma [5]; diffuse myocardial uptake suggests several diseases, such as recent myocardial infarction and amyloid deposit [3, 6, 7]. Moreover, the same papers report

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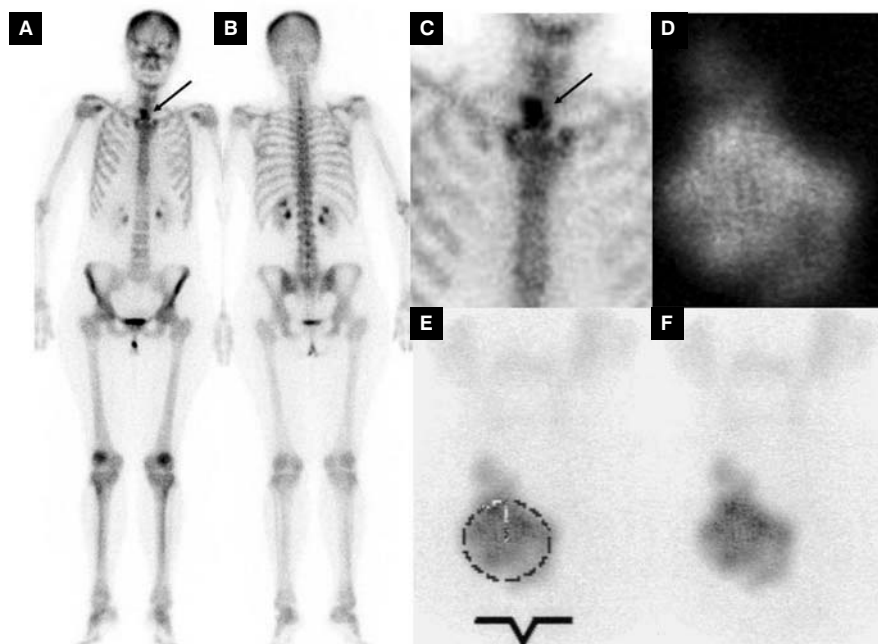


Figure 1. This figure shows anterior view (A), posterior view (B), and anterior magnified view (C) of Tc-99m methylene diphosphonate (MDP) scintigraphy revealing abnormal extraosseous uptake (black arrow). Tc-99m-pertechnetate thyroid scintigraphy is also reported in white background with (E) and without (F) jugular landmark and in black background (D).

about Tc-99m MDP uptake at adrenal metastases from non-small cell lung cancer [8] and gallbladder uptake [9].

Tc-99m-MDP thyroid incidental uptake is not a frequent finding and it is possibly caused by biopsy procedure [10], the presence of calcification [11], anaplastic carcinoma [12], or metastatic calcifications in patients affected by primary hyperparathyroidism [13].

In the positron emission tomography era, traditional nuclear medicine imaging still has an important role in the diagnostic field, and incidental findings may be very useful in patient management, revealing unknown diseases and allowing correct therapeutic decisions.

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