Case Report

Metastatic superscan on ^{99m}Tc-MDP bone scintigraphy in a case of carcinoma colon: Common finding but rare etiology

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ABSTRACT

Bone scintigraphy in which there is excessive skeletal radioisotope uptake in relation to soft tissues along with absent or faint activity in the genitourinary tract is known as a 'superscan'. Prostate cancer is the most common malignancy associated with superscan along with others such as lung cancer, breast cancer and haematological malignancies. Here we present the case of a 41 year old woman with carcinoma colon with metastatic superscan on ^{99m}Tc-MDP bone scintigraphy, a very rare cause for metastatic superscan.

Keywords: Colon cancer, metastasis, ^{99m}Tc-MDP bone scintigraphy, superscan

INTRODUCTION

A bone scan in which there is excessive skeletal radioisotope uptake in relation to soft tissues along with absent or faint activity in the genitourinary tract is known as a 'superscan'.[1] Apart from prostate cancer, which is the most common condition associated with a superscan, other malignancies like breast cancer, lung cancer[1-4] can cause superscan appearance on bone scintigraphy. Here we present a case of colon carcinoma with metastatic superscan on ^{99m}Tc-MDP bone scintigraphy, a very rare cause for metastatic superscan.

CASE REPORT

A 41-year-old woman underwent left hemicolectomy with excision of local lymph nodes two years back for carcinoma of the descending colon. No adjuvant chemotherapy was given and she was under routine follow up since then. Two years later she presented with backache. Her serum carcinoembryonic antigen (CEA) level was significantly elevated (490 ng/ml; normal: <2.5 ng/ml), as compared to her previous CEA levels (1.3 ng/ml) three months back. Plain radiography of the abdomen was normal. Contrast enhanced computed tomography (CT) of the abdomen, including the visualized bones was within normal limits [Figure 1]. Her serum alkaline phosphatase (805 IU/L; normal: 20-140 IU/L), serum calcium level (7.9 mmol/L; normal: 2.2-2.6 mmol/L) and serum phosphate level were all elevated (3.1 mmol/L; normal: 0.81-1.45 mmol/L). The patient was referred for ^{99m}Tc-MDP bone scintigraphy for metastatic work up. Her bone scintigraphy revealed intense radiotracer uptake involving almost the entire skeleton with high bone to soft tissue uptake [Figure 2]. The kidneys were very faintly visualized. These findings suggested 'metastatic

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DOI: 10.4103/0972-3919.136569

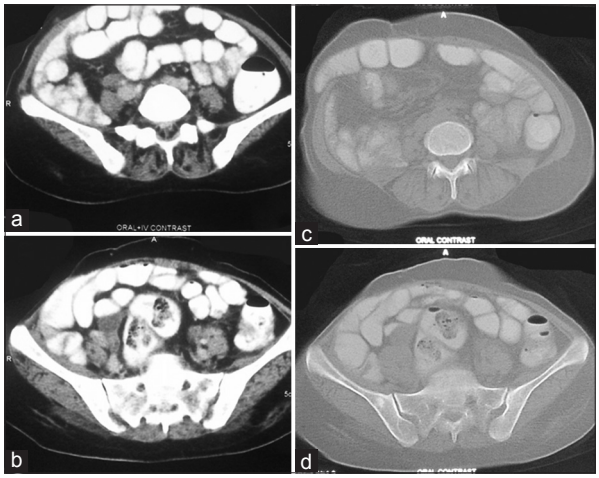

Figure 1: Contrast enhanced computed tomography (CT) of the abdomen, including the visualised bones was within normal limits (a-d)

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Figure 2: ^{99m}Tc-MDP bone scintigraphy for metastatic work up. It revealed intense radiotracer uptake involving almost entire skeleton with high bone to soft tissue uptake (a and b). Bilateral kidneys were almost invisible (a and b). These findings are suggestive of 'metastatic superscan'

superscan'. Bone biopsy confirmed the diagnosis of metastatic carcinoma. The patient was started on chemotherapy, but she succumbed to her disease one month later.

DISCUSSION

Excessive skeletal radioisotope uptake in relation to soft tissues along with absent or faint activity in the genitourinary tract on bone scintigraphy is known as a 'superscan'. Non-visualization of the kidneys in a bone scan should alert the physician for presence of a superscan in case the renal function is normal. Common causes include malignancies like prostate cancer, breast cancer, and lung cancer.[1-4] Hematological conditions like leukemia, lymphoma, myelofibrosis, Waldenstrom's macroglobulinemia have been reported to be associated with a superscan.[5,6] It can also be seen in metabolic bone diseases like renal osteodystrophy, Paget's disease and hyperparathyroidism.[7] Occasionally superscan is seen in hyperthyroidism[8] and fibrous dysplasia.[9] Some of the rare causes for metastatic superscan include urinary tract transitional cell carcinoma and nasopharyngeal carcinoma.[10] However, to the best of our knowledge, superscan secondary to colon cancer has not been reported previously and is described here. Presence of a superscan usually indicates advanced stage of the disease, when there has already been extensive skeletal metastasis followed by an osteoblastic reaction. The patient prognosis is usually poor, as was in the present case.

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How to cite this article: Chakraborty PS, Sharma P, Karunanithi S, Bal C, Kumar R. Metastatic superscan on ^{99m}Tc-MDP bone scintigraphy in a case of carcinoma colon: Common finding but rare etiology. Indian J Nucl Med 2014;29:158-9.

Source of Support: Nil. **Conflict of Interest:** None declared.