Tc-99m Pentavalent DMSA Scintigraphy in Myelofibrosis Detection

John T. Koutsikos, MD,* Antigone Velidaki, MD,† and Theodoros Athanasoulis, MD*

Abstract: In a 62-year-old man with medullary carcinoma of the thyroid, a postoperative Tc-99m dimercaptosuccinic acid [(V) DMSA] study was requested. In the Tc-99m (V) DMSA scan, no abnormalities, indicating local recurrence or metastatic disease, were observed. However, there was increased uptake in the spleen and liver and significantly diffusely increased uptake in the bone marrow. The patient also had a history of myelofibrosis and these findings appear to have been the result of this pathology.

Key Words: Tc-99m (V) DMSA, myelofibrosis, bone marrow uptake

REFERENCES

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From *Department of Nuclear Medicine, Alexandra University Hospital, Athens, Greece; and the †General Army Hospital of Athens, Athens, Greece.

Reprints: John T. Koutsikos, MD, Alexandra University Hospital, Department of Nuclear Medicine, 44-48 Martinegou Str., Athens, Greece 11524. E-mail: jtkoutsik@yahoo.gr.

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A Tc-99m (V) DMSA scan was performed on a 62-year-old man with medullary carcinoma of the thyroid to evaluate the possibility of local recurrence and/or metastatic disease. The study did not reveal any abnormal lesion indicating metastatic spread. However, increased uptake of the radiopharmaceutical in the liver and spleen was observed. Apart from the normal sites of tracer uptake (vascular blood pool, kidneys, urinary bladder, scrotum, base of penis), unexpected uptake was also detected in the pelvis, vertebrae, ribs, shoulders, and knee joints. This uptake pattern was considered as nearly pathognomonic for active bone marrow as a result of the patient's myelofibrosis with a pathway similar to Tc-99m (V) DMSA accumulation in inflammatory processes.

Idiopathic myelofibrosis is a chronic myeloproliferative disorder that is clinically characterized by anemia, progressive splenomegaly, bone marrow fibrosis, and extramedullary hematopoiesis. It is typically presenting with uniformly fibrotic bone marrow, whereas many patients develop osteosclerosis and angiogenesis. Bone marrow scintigraphy, using Tc-99m sulfur colloid and In-111 chloride, and immunoscintigraphy with Tc-99m-labeled antigranulocyte antibodies are highly sensitive tests for the detection of bone marrow abnormalities and considered to be important tools for the evaluation of myelofibrosis.

Similar findings have been reported previously with F-18 FDG PET imaging as a result of increased metabolism, F-18 sodium fluoride PET scans and bone scans as a result of osteosclerosis.