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Tc-99m depreotide SPECT demonstrates photon-deficiency in the thoracic vertebrae after adjunct radiation therapy of lung cancer: Correlation with MRI and bone scintigraphy

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Fifteen months after right lobe lobectomy with adjunctive radiation therapy for squamous cell carcinoma, a patient 53-yr-old man underwent Tc-99m depreotide chest single photon emission tomography (SPECT). In addition to two focal areas of abnormally increased uptake in the right lung, the Tc-99m depreotide SPECT showed cold areas in the middle thoracic vertebrae. Photopenic areas in the 6th and 7th thoracic vertebrae were shown on a bone scintigraphy. T1 weighted magnetic resonance imaging (MRI) of the spine showed fatty replacement of the marrow and Schmorl's nodes involving the 5th to 11th thoracic vertebrae. The vertebrae are normally visualized in Tc-99m depreotide SPECT imaging study, and lung tumor is usually somatostatin receptor positive with demonstrable activity in the lung. Absent uptake in the vertebrae in the fatty replacement of the marrow and multiple and giant vertebral Schmorl's nodes in the correspondent vertebrae in MRI may reflect visualization of vertebrae due to Tc-99m depreotide localizing in the bone marrow. Of the three imaging modalities, MRI showed the widest areas of thoracic vertebral involvement. One should be aware that a cold lesion in the vertebrae on Tc-99m depreotide imaging study may result from irradiation and may indicate the presence of a benign lesion in the bone marrow.

Key words: Tc-99m depreotide, squamous cell carcinoma, bone scintigrapy, SPECT (single photon emission tomography), MRI (magnetic resonance imaging), Schmorl's node, photon-deficient area, bone marrow, radiation therapy