

흉선암종에서 우연히 발견된 환 모양의 Tc-99m MIBI 섭취 증가

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Unexpected Uptake of Tc-99m MIBI in Thymic Carcinoma: Ring-like Appearance

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A 59-year-old man with thymic carcinoma underwent Tc-99m MIBI myocardial SPECT, and Tc-99m MIBI uptake in the mass was unexpectedly found in a planar image. SPECT images of the thorax showed an increased uptake area with central photon deficiency (a ring-like appearance), which reflected central tumor irreversible ischemia or progressing necrosis with peripheral viable tumor tissue. (Nucl Med Mol Imaging 2007;41(3):255-257)

Key Words: SPECT, Tc-99m MIBI, thymic carcinoma, mediastinal tumor

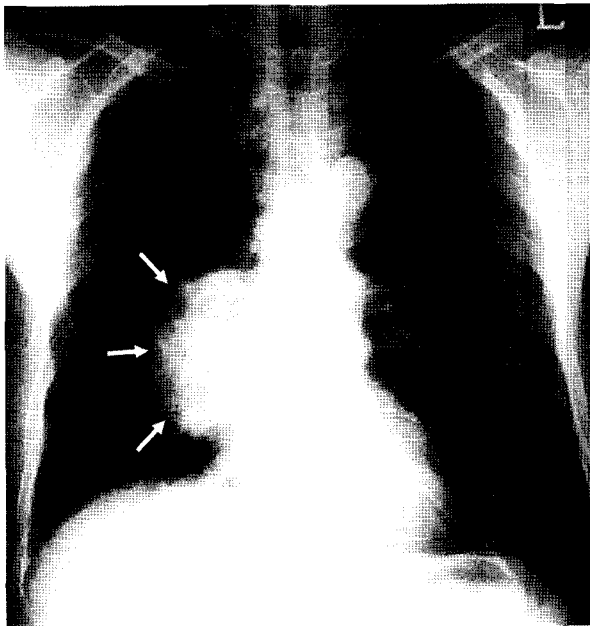


Fig. 1. A 69-year-old man was admitted due to a mass (arrows) in the mediastinum visualized by chest radiography at a local clinic. The patient had a 4-month history of chest discomfort and exertional dyspnea.

- **Received:** 2007. 3. 25. • **Accepted:** 2007. 3. 30.
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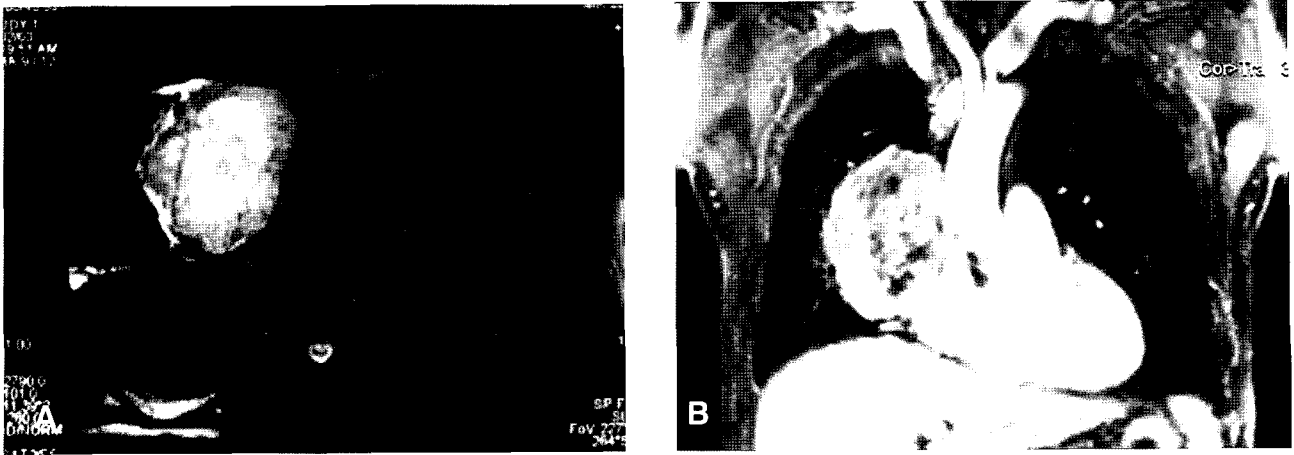


Fig. 2. (A) T2-weighted MR transverse image showed a mass in the mediastinum with a high signal in the central portion and intermediate signal intensity in the peripheral rim. (B) Gadolinium-enhanced T1-weighted coronal image showed enhancement in the peripheral rim of the mass. CT-guided needle biopsy revealed a sarcomatoid type thymic carcinoma. Thymic carcinoma is a rare malignant neoplasm arising from the thymic epithelium. It is highly aggressive with a very poor prognosis. The majority of patients are middle-aged (average age 46 years) with a slight male predominance (1.5:1). Two third of cases present with symptoms directly attributable to the mediastinal mass, but one third were asymptomatic and identified due to incidental chest X-ray findings.¹⁾

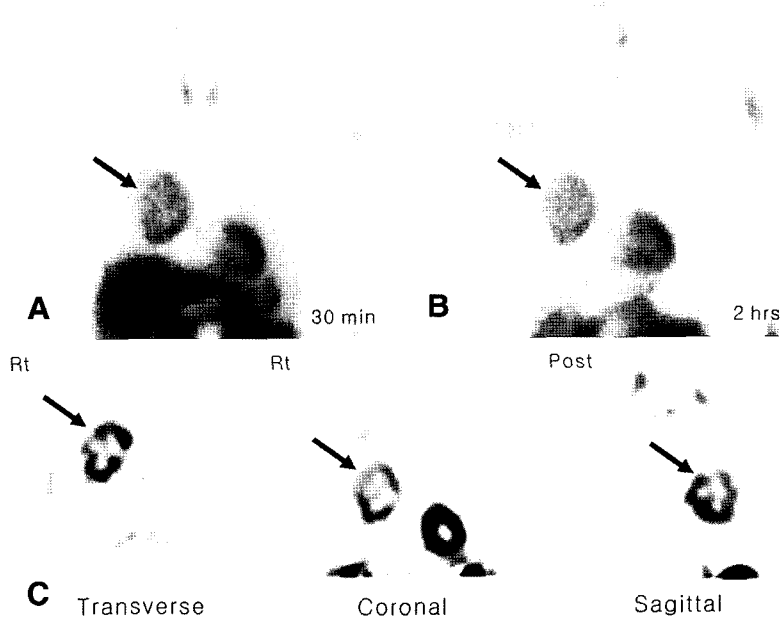


Fig. 3. The patient underwent myocardial single photon emission computed tomography (SPECT) with Tc-99m methoxyisobutylisonitrile (MIBI) for surgical planning. After injecting 555 MBq of Tc-99m MIBI i.v., (A) anterior thoracic image obtained at 30 minutes showed unexpected Tc-99m MIBI uptake in the mediastinal thymic carcinoma (arrow), which revealed a central photon deficiency. (B) Delayed imaging at 2 hours post-Tc-99m MIBI showed persistent uptake in the thymic carcinoma (arrow). (C) Selected transverse, coronal, and sagittal SPECT images through the mediastinal mass at 30 minutes showed a clear delineated ring-like appearance (arrows) as compared with that observed on planar images.

Tc-99m MIBI and Tc-99m tetrofosmin are myocardial perfusion imaging agents competing with Tl-201, and have been shown to have potential utility as tumor imaging agents for various tumors of the lung, breast, liver, thyroid, and other organs.²⁻⁶⁾ Although Tc-99m tetrofosmin and Tl-201 uptake have been recognized in thymic carcinoma, little information is available on Tc-99m MIBI uptake in thymic carcinoma.⁶⁻⁸⁾ Tc-99m MIBI uptake by tumors depends on blood perfusion and tumor viability, and is avidly taken up by viable tumor tissues but not by necrotic or irreversible ischemic tissues.^{2,9)} Moreover, when tumor necrosis is mild or not severe enough to be visualized by CT, Tc-99m MIBI scans may demonstrate the pathophysiologic process of ischemia adjacent to necrosis, and depict tumor central photopenia, i.e., a ring appearance.^{2,9)}

Here, the authors present the case of a patient with thymic carcinoma who revealed unexpected Tc-99m MIBI uptake, which was ring-like in appearance and reflected necrosis or irreversible ischemia in the central portion of the tumor.

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