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CASE REPORT

Unexpected large benign thymoma on myocardial scintigraphy, a case report

Sepideh Hekmat [a,*], Nahid Yaghoobi [b]

[a] Department of Nuclear Medicine, Hasheminejad Hospital, Iran University of Medical Sciences, Tehran, Iran
[b] Department of Nuclear Medicine and Medical Imaging, Rajaei Cardiovascular, Medical and Research Center, Iran University of Medical Sciences, Tehran, Iran

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Abstract Myocardial perfusion imaging (MPI) by 99mTc-sestamibi constitutes a major part of nuclear medicine studies. Incidental detection of extracardiac abnormalities occurs not infrequently. These can include benign and malignant lesions and their detection can be of great value in patient's future.

We present a 60 year-old man who underwent MPI to evaluate coronary artery disease as the possible cause of his chest discomfort. The images revealed a large area of intense increased tracer uptake in the antero- inferior mediastinum that further evaluation confirmed to be a benign thymoma.

1. Introduction

99mTc-sestamibi is a lipophilic cationic agent used mainly for myocardial perfusion imaging (MPI). It localizes by passive diffusion and intracellular retention. Non-cardiac normal tracer uptake with various intensities can be seen in the lungs, lactating breasts, liver, gallbladder and bowel. The incidence of extracardiac incidental findings in SPECT studies of the heart varies greatly from 0.69% non-cardiac findings by Jones et al. to 22.55% intra-thoracic and intra-abdominal findings by Shin et al. (1).

Extracardiac pathologic uptake can occur in benign or malignant tumors, infectious and non-infectious diseases.

Thymoma is a rare tumor (incidence rate: 0.15/100,000) with a largely indolent growth pattern. It has malignant potential and can invade locally and metastasize regionally. Thymomas constitute 20% of mediastinal tumors and are the most common tumor of the anterior mediastinum. It typically presents in 4th or 5th decades of life. Fifty percent of patients are asymptomatic and incidentally detected (2).

2. Case report

Our patient was a 60 year-old man with atypical chest pain and hyperlipidemia who was referred for MPI. He performed exercise test and 20 mCi 99mTc-MIBI was injected when he achieved 90% of predicted maximum heart rate for his age at the 3rd stage according to the Bruce protocol. Fifteen

* Corresponding author. Tel./fax: +98 2188644471.
E-mail address: sepidhekmat@hotmail.com (S. Hekmat).
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minutes after injection, SPECT images were obtained using a single-headed MIE gamma camera, equipped with a LEAP collimator. Images were acquired in a 180 degree arc in step and shoot mode with 32 projections, matrix 64 × 64 and 25 s per projection. Noting hypoactivity in the inferior wall on the stress phase, we obtained a left lateral planar image in addition to repeating the study in the prone position. No significant inferior wall hypoactivity was detected on these additional images, approving the possibility of diaphragmatic attenuation rather than ischemia in that region.

Rest images was obtained on the following day with the same imaging parameters.

The reconstructed images showed no evidence of ischemia (Fig. 1). But cinematic review of the raw data to check possible motion, revealed a large area of increased tracer uptake, isoactive with the heart, in the right side of the lower mediastinum on both phases of the study (Figs. 2 and 3). Chest X-ray and CT scan were requested. CT scan showed a 90 * 73 mm well defined enhancing soft tissue mass corresponding to the uptake area (Figs. 4 and 5). The patient underwent biopsy and the mass was proved to be a benign thymoma on histology. He refused further surgical treatment.

3. Discussion

99mTc-sestamibi is widely used for MPI. It is also well-known as a tumor-imaging agent. The exact mechanism of 99mTc-MIBI uptake is not well known. It seems to be more closely

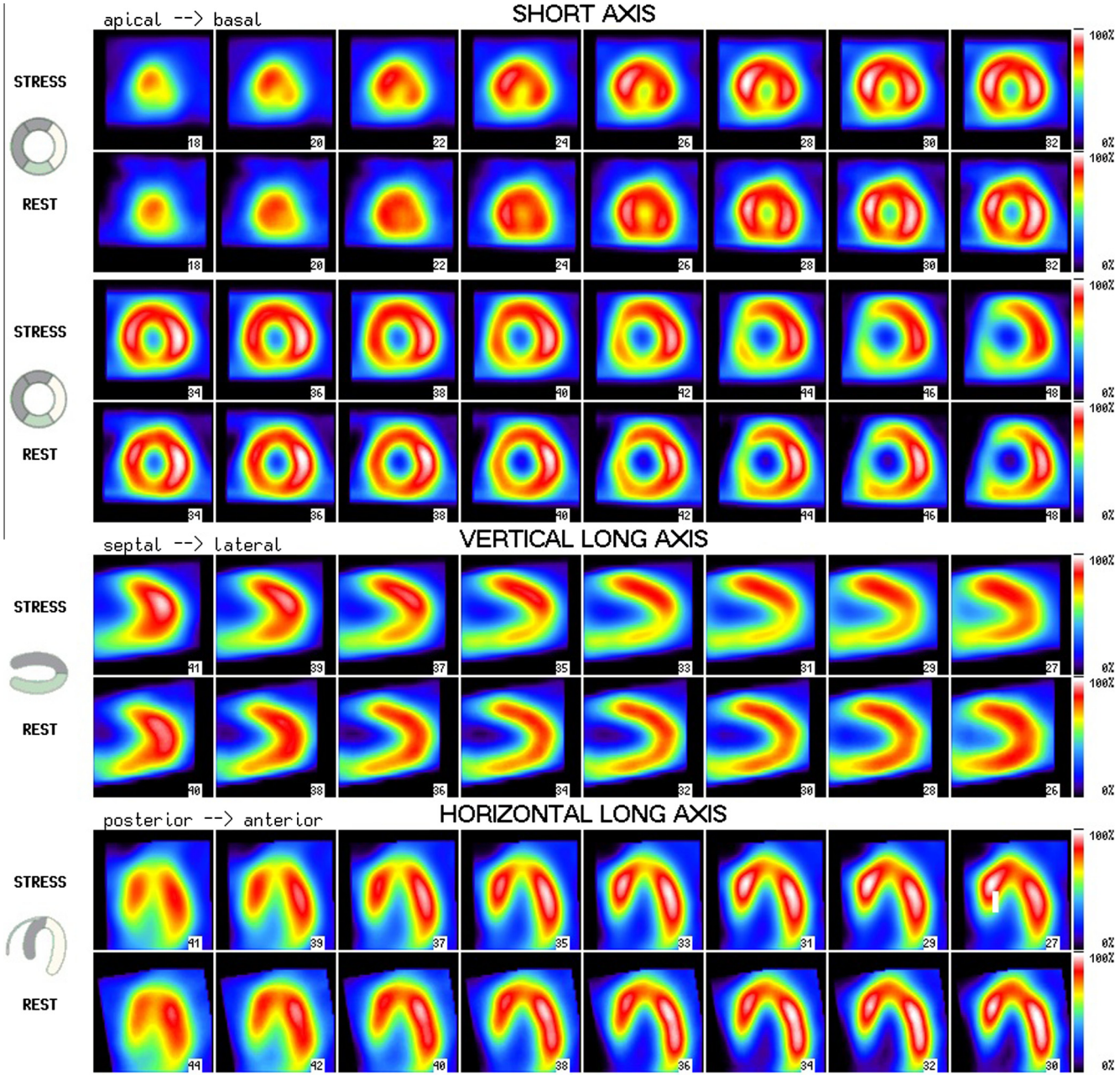

Fig. 1 Reconstructed myocardial perfusion SPECT images reveal no significant reversible ischemia.