

Unexpected abnormal extra-cardiac mediastinal accumulation of technetium-99m-tetrofosmin in patient with acute pericarditis

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A 58-year old woman had felt some chest pains on effort for several days. She was admitted to the emergency room with severe and refractory chest pain after exercise. Electrocardiogram showed marked ST-segment elevations in II, III, aV_F and V₁₋₆ electrodes. Echocardiogram revealed neither wall motion asynergy in the left ventricle nor abnormal pericardial effusion. Chest X-ray showed normal findings, and mild elevation of C-reactive protein was observed in the blood chemistry data. Her chest pain was relieved by nitroglycerin administration. Emergent technetium-99m-tetrofosmin myocardial imaging did not show any abnormal perfusion in the left ventricle. However, an abnormal extra-cardiac mediastinal accumulation was detected in the planar image. Contrast-enhanced chest CT scanning also demonstrated an inhomogeneously enhanced tumor in the anterior superior mediastinum. The tumor was surgically removed and was finally diagnosed as an invasive thymoma. Technetium-99m-tetrofosmin scintigraphy happened to provide useful information for diagnosing acute pericarditis with mediastinal tumor.

Key words: ^{99m}Tc-tetrofosmin, acute pericarditis, invasive thymoma

INTRODUCTION

MANY FACTORS are thought to have a possibility of causing pericarditis and we occasionally have trouble in determining the cause in the presence of atypical symptoms or results of some examinations.¹ We report an aseptic pericarditis case caused by anterior mediastinum tumor, in which technetium-99m-tetrofosmin (^{99m}Tc-tetrofosmin) scintigraphy was useful for the diagnosis.

CASE REPORT

A 58-year-old female smoker had felt an occasional chest pain with relation to exercise for a few days before the admission. Her chest pain was slightly relieved by rest and was also resolved by sublingual administration of nitro-

glycerin tablets. Taking a sauna bath after jogging, she suddenly felt severe and refractory chest pain and was urgently admitted to our emergency room. Although she showed normal vital signs and normal findings on physical examination, electrocardiogram showed marked ST-segment elevations in II, III, aV_F and V₁₋₆ electrodes and abnormal Q waves in II, III and aV_F electrodes (Fig. 1). Sublingual administration of nitroglycerin tablets relieved the chest pain; however, the abnormal electrocardiogram findings did not change at all. Echocardiogram revealed neither wall motion asynergy in the left ventricle nor abnormal fluid accumulation in the pericardial space. Chest X-ray showed normal findings and blood chemistry data were normal except for mild elevation of C-reactive protein (2.6 mg/dl). She consecutively underwent ^{99m}Tc-tetrofosmin myocardial scintigraphy at rest for evaluating myocardial ischemia. The images of myocardial single photon emission computed tomography showed uniform perfusion in the left ventricle (Fig. 2A), but the planar image visualized a marked and abnormal extra-cardiac accumulation in the mediastinal area (Fig. 2B *arrow*). Contrast-enhanced chest CT scanning also demonstrated a 5-cm, inhomogeneously enhanced tumor in the anterior superior mediastinum (Fig. 3). Coronary angiography

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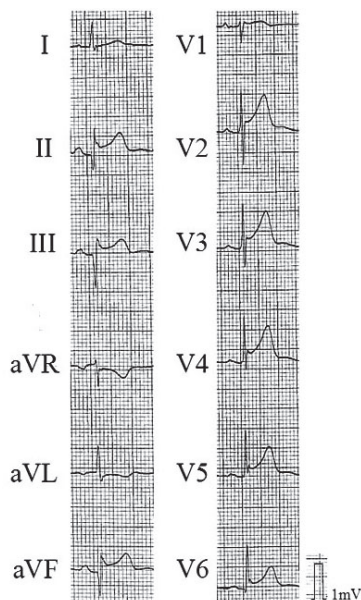


Fig. 1 Marked ST-segment elevations in II, III, aV_F and V₁₋₆ electrodes and abnormal Q waves in II, III and aV_F electrodes were observed in the electrocardiogram on admission.

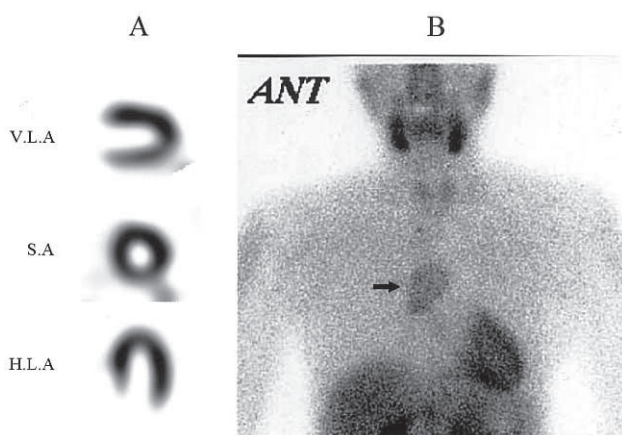


Fig. 2 Technetium-99m-tetrofosmin myocardial scintigraphy. (A) The images of single photon emission computed tomography showed uniform perfusion in the left ventricle. (B) Planar image showed abnormal extra-cardiac accumulation in the mediastinal area (*arrow*). V.L.A = vertical long axis, S.A = short axis, H.L.A = horizontal long axis

performed for preoperative examination showed neither organic stenoses nor vasospasm. The tumor, which was confirmed to invade the pericardial sac, mediastinal pleura, left brachiocephalic vein, S3 segment of right lung and regional lymph nodes, was surgically removed together with all the invaded organs and was finally diagnosed as an invasive thymoma in IV-a stage by histological evaluation. A week after the surgery, the abnormal ST-segment elevations of the electrocardiogram completely disappeared.

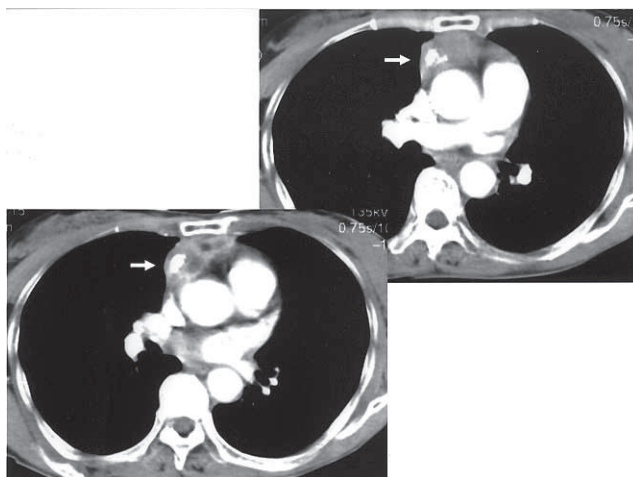


Fig. 3 Contrast-enhanced chest CT scanning. An inhomogeneously enhanced tumor was detected in the anterior superior mediastinum (*arrow*).

DISCUSSION

There are many reports about pericarditis as the initial manifestation of mediastinal tumor with pericardial invasion.^{2,3} However, most cases are relatively easy to be diagnosed by some examinations, such as chest X-ray or echocardiography, because of their critical conditions. Unusually, in the current case, there were no positive findings of some examinations except for ST elevations and abnormal Q waves in the electrocardiogram. In addition, although it might have been a placebo effect, sublingual administration of nitroglycerin tablets mitigated her chest pain. Thus, we could not completely rule out the possibility of acute coronary syndrome (ACS) on account of her clinical course. Emergent myocardial scintigraphy with ^{99m}Tc-tetrofosmin was useful for the diagnosis in patients with ACS^{4,5} and we could affirm through this method that her chest symptom was not from ACS. Furthermore, the unexpected abnormal extra-cardiac mediastinal accumulation in the planar image made it easier to suppose the possibility of aseptic pericarditis from a neoplasm. Mediastinal tumors, including thymoma, seminoma and lung cancer, demonstrate thallium-201 and ^{99m}Tc-tetrofosmin uptake,⁶ and occult mediastinal tumor may be detected during exercise myocardial perfusion imaging using these radioisotopes for coronary artery disease.⁷ In the current case, ^{99m}Tc-tetrofosmin myocardial imaging provided us useful information for not only ruling out the possibility of ACS but also diagnosing occult thymoma with aseptic pericarditis.

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