

## Unexpected detection of pericardial effusion on myocardial perfusion scintigraphy

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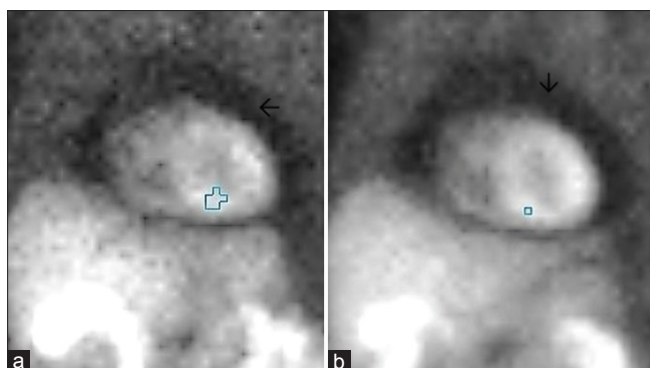
We report unexpected detection of pericardial effusion during  $^{99m}\text{Tc}$ -methoxyisobutylisonitrile myocardial perfusion scintigraphy (MPS) in a patient with end-stage renal disease on hemodialysis. A 54-year-old diabetic and hypertensive male patient having end-stage renal disease on hemodialysis for the last 15 years was referred for MPS as a part of perioperative evaluation for renal transplant surgery. He had complaints of dyspnea on exertion and occasional palpitation for the last 1 month without any history of chest pain or orthopnea. The patient's physical examination was grossly normal, except periorbital edema and dyspnea on the day of MPS. Echocardiography done 1 month prior to MPS revealed severe concentric left ventricular hypertrophy, diastolic dysfunction without any regional wall motion abnormality/pericardial effusion/structural abnormality (ejection fraction  $\sim 45\%$ ).

A single day standard stress/rest  $^{99m}\text{Tc}$ -sestamibi MPS was performed using adenosine as pharmacological stress agent. The planar projection images in both stress and rest studies showed severely reduced tracer uptake surrounding whole of the myocardium in the shape of a halo [Figures 1 and 2] and increased translational motion on gated single photon emission computed tomography (SPECT) images. The finding of halo around the heart was suspicious of pericardial effusion and subsequent two-dimensional echocardiography confirmed the diagnosis of pericardial effusion. The echocardiography revealed large fluid collection ranging from 2 to 4.5 cm surrounding the heart along with early diastolic right atrium collapse without any

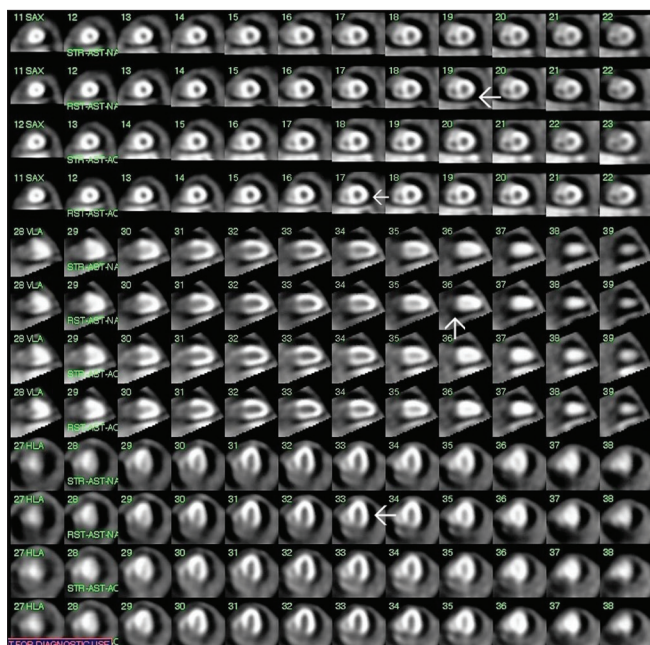
evidence of diastolic collapse of the right ventricle excluding cardiac tamponade [Figure 3].

Pericardial effusion is characterized by abnormal fluid accumulation in the pericardial cavity. The dyspnea is the most common symptom although degree of symptomatology does not necessarily correlate with the size of the effusion.<sup>[1]</sup> Echocardiography is the imaging modality of choice for the diagnosis of pericardial effusion and helps in identifying the myocardial dysfunction. It is sensitive, suitable in unstable patients and performs rapidly.<sup>[2]</sup> The chest X-ray for pericardial effusion shows increased cardiac silhouette known as “water bottle heart” while CT scan may help in detecting the minimal pericardial effusion.<sup>[3]</sup>

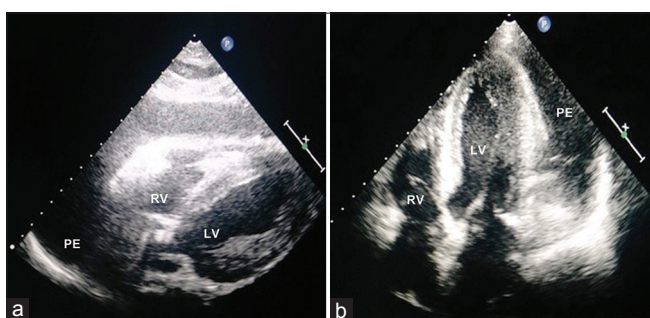
MPS is most commonly performed investigation for known or suspected coronary artery disease and about 0.2–1.2% of MPS studies are associated with incidentally detected extracardiac abnormalities including parathyroid adenoma, lymphoma, lung, breast, and thyroid malignancy.<sup>[4]</sup> Pericardial effusion is rarely detected with MPS and the findings on MPS include “halo” of diminished tracer concentration surrounding the heart on projection images due to fluid accumulation as well as increased translational motion of the heart on the gated SPECT images.<sup>[5]</sup> However, echocardiography confirms the findings and allows more accurate measurements of effusion size and filling pressures during the respiratory cycle and helps in ruling out the cardiac tamponade. The finding of pericardial effusion on MPS in the index case emphasizes that projection images have been carefully



**Figure 1:** (a and b) Stress and rest planar projection images showing a thick "halo" of diminished tracer concentration surrounding the heart



**Figure 2:** Stress and rest short axis, vertical long axis, and horizontal long axis tomographic images showing the "halo of reduced tracer uptake" surrounding the heart



**Figure 3:** (a and b) Transthoracic two-dimensional echocardiography images obtained at late systole showing a large pericardial effusion surrounding the heart (PE: Pericardial effusion, LV: Left ventricle, RV: Right ventricle)

reviewed before reporting on myocardial perfusion defects to identify any extracardiac abnormality with their diagnostic and prognostic implications.

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**Conflicts of interest**

There are no conflicts of interest.

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