

Incidental detection of myocardial ischemia during F-18 FDG CoDe PET for the evaluation of a solitary pulmonary nodule

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Abstract

The authors report a case of unsuspected myocardial ischemia detected during CoDe FDG PET (coincidence detection fluorodeoxyglucose positron emission tomogram) which was performed for the evaluation of a solitary pulmonary nodule. Camera-based FDG PET without attenuation correction often reveals false defect in the inferior wall of the left ventricle in normals due to excessive attenuation. However, this asymptomatic patient had increased uptake in the inferior wall suggesting ischemic myocardium. The scan finding was confirmed by Tl-201 myocardial SPECT and coronary angiogram. The patient then underwent successful PTCA of mild RCA and right ventricular branch followed by right upper lobectomy for small cell lung cancer. (**Korean J Nucl Med 2001;35:398-400**)

Key Words : CoDe PET, F-18 FDG, viable myocardium

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M: 58 1.7cm (SCLC)

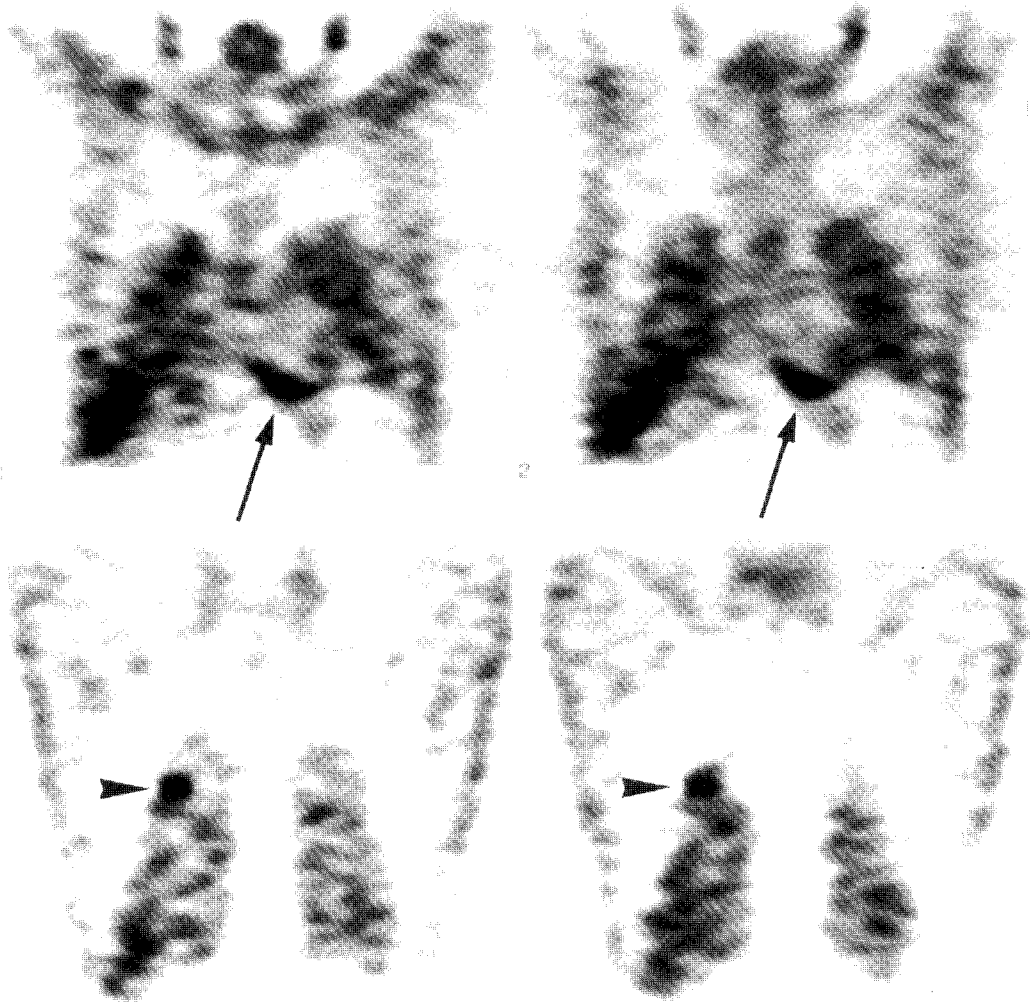


Fig. 1. A 58-year-old male patient was admitted to the hospital for the evaluation of a solitary pulmonary nodule (SPN) measuring 1.7 cm in diameter in right upper lobe. Camera based CoDe PET was performed for diagnosis and staging of the SPN. One hour after the intravenous administration of 148 MBq (4 mCi) F-18 FDG following fasting for 6 hours, PET imaging of the thorax was acquired with a dual-head gamma camera equipped with 5/8th of an inch thick NaI (TI) crystals (Varicam; Elscint, Haifa, Israel). PET images were reconstructed using filtered back projection but without attenuation correction (AC). Coronal sections revealed a focal increased FDG uptake in the posterior segment of right upper lobe suggesting carcinoma (arrow heads). There was no nodal involvement. An incidental finding was a curvilinear uptake in the inferior wall of left ventricle without clear outline of the anterolateral wall (arrows). Conventional FDG PET is an accurate method in the detection of viable myocardium (1), and the potential usefulness of camera based FDG PET for the assessment of myocardial viability has been reported (2). Focal FDG uptake in fasting suggests the presence of viable myocardium in this patient who was asymptomatic and his EKG was normal at rest and during adenosine infusion. FDG PET without AC causes false defect in the inferior and septal regions (2) but increased uptake in the inferior wall in this patient is highly suggestive of ischemic myocardium.

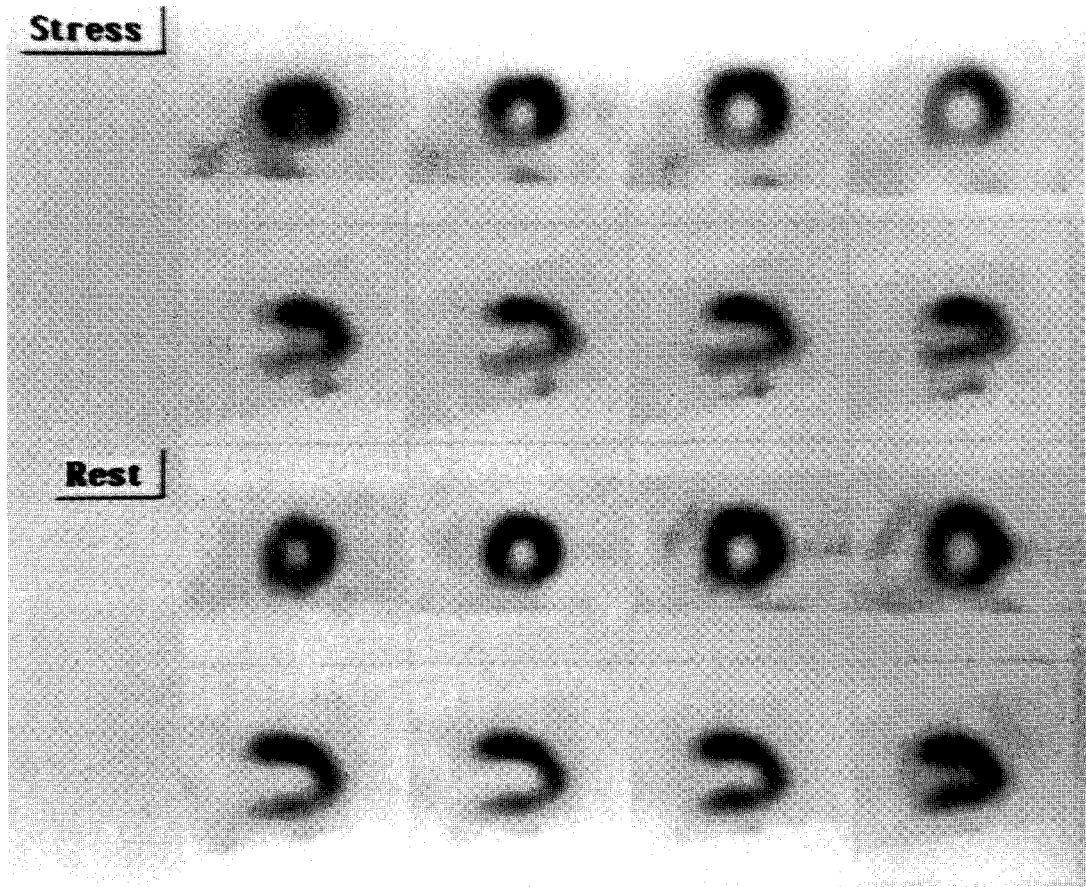


Fig. 2. Next day, the patient underwent TI-201 myocardial SPET (single photon emission tomography) using adenosine. Stress images in axial and vertical long axes (top two rows) depict mild to moderate perfusion defect at inferior, inferoseptal and inferior-apical regions with partial redistribution at rest (bottom two rows) suggesting adenosine induced ischemia in the right coronary artery (RCA) distribution.

Coronary angiogram confirmed 80% stenosis of mid RCA, and right ventricular branch and PTCA (percutaneous transluminal coronary angioplasty) of these lesions was performed successfully. Later on, he had right upper lobectomy for small cell lung cancer.

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