57

Clinical value of adenosine stress nitrogen-13 ammonia positron emission tomography: comparison with Tc-99m sestamibi single photon emission computed tomography

영남대학교병원 핵의학과[1], 내분비내과[2], 순환기내과[3]

조인호[1]*, 천경아[1], 원규장[2], 이형우[2], 홍그루[3], 박종선[3], 신동구[3], 김영조[3], 심봉섭[3]

Purpose: The diagnostic value of adenosine stress nitrogen-13 ammonia positron emission tomography (PET) for assessing coronary artery disease (CAD) was compared with adenosine stress Tc-99m sestamibi single photon emission tomography (SPECT). **Methods:** Twelve patients (M/F:8/4, 62±12 years) underwent both two day adenosine stress-rest SPECT imaging using a dual head gamma camera (Hawkeye, GE) and adenosine stress-rest PET imaging using PET/CT(Discovery ST, GE). Also, coronary angiography was done within 1 week in all patients. **Results:** The sensitivity for detecting disease in individual coronary arteries(>50% stenosis) was higher in PET than SPECT.(90% vs 68%) When their interpretations were classified as normal, reversible perfusion defect and fixed defect in 168 myocardial segments, SPECT and PET findings were concordant in 92 segments (55%). However, 27 segments showed a fixed defect by SPECT but a reversible perfusion defect by PET, whereas there were only 3 segments showing a reversible perfusion defect by SPECT and a fixed defect by PET. PET identified reversible perfusion defects in 52% of the myocardial segments showing a fixed defect by SPECT. **Conclusion:** We conclude the PET showed higher sensitivity for detecting individual stenosed vessels. Since adenosine stress nitrogen-13 ammonia PET detected more reversible perfusion defects, it may overcome the underestimation of myocardial ischemia by SPECT.

58

Evaluation of arterial FDG uptake and calcification in healthy subjects with serial FDG PET/CT

Department of Nuclear Medicine, Samsung Medical Center, Sungkyunkwan University School of Medicine, Seoul, Korea

Su Jin Lee*, Kyung-Han Lee, Eun Jeong Lee, Hyun Woo Chung, Young Seok Cho, Joon Young Choi, Yong Choi, Yearn Seong Choe, Byung-Tae Kim

Purpose: Increased FDG uptake and calcium deposit have been suggested to indicate active inflammation and mature calcification of atheroma respectively. However, little is known regarding the natural course of FDG uptake and whether they may latter evolve into calcified lesions. Thus we investigated this issue using FDG PET/CT with serial follow-up studies in healthy subjects. **Methods:** Subjects were 17 adults (M:F=12:5, mean age 58 yrs) who checked PET/CT as part of a general medical examination, and all had follow-up PET/CT about 1 year later. We reviewed all studies for the presence of arterial FDG uptake and calcification. Sites in the ascending and descending aorta, the carotid and iliac arteries were examined on the PET, CT, and fusion images. Lesion to blood pool ratio (peak SUV of lesion/peak SUV of luminal activity at the aortic arch) greater than 1.5 was considered increased FDG uptake. Calcification was assessed visually. Changes of each lesion were evaluated on follow-up studies. **Results:** A total of 108 and 71 abnormal sites were noted on CT or PET in the initial and follow-up studies, respectively. Increased FDG uptake only was observed at 45 sites (42%) in the initial studies. A majority of these sites disappeared spontaneously in the follow-up studies, when a total of 14 (20%) increased FDG uptake sites were found. Calcifications without FDG uptake were noted at 55 (51%) and 56 (79%) sites in the initial and follow-up studies, respectively. Increased arterial FDG uptake and calcification overlapped at 8 sites (7%) and only 1 site (1%) in the initial and follow-up studies, respectively. **Conclusion:** Arterial regions of focally increased FDG uptake and calcification are relatively frequent findings in healthy adults. However, these lesions rarely overlapped, which indicates that they represent different phases of atherosclerosis development. Furthermore, the lack of persistence of the majority of the FDG uptake suggests that focal inflammation in arteries may frequently occur as transient event.