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Relevance of transient ischemic dilatation in elderly patients with comorbidities undergoing stress myocardial perfusion SPECT imaging

Authors:
P Shanmuga Sundaram¹, S Padma¹, ¹Amrita Institute of medical sciences - COCHIN - India,
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Background:
It is well known that risk of CAD increases with age more so when associated with comorbidities. Transient Ischemic Dilatation of left ventricle (TID) is a sensitive & highly specific marker of CAD. It correlates with critical multi-vessel stenosis, increased risk of adverse outcomes, even in absence of significant perfusion defects.

Aim:
Our retrospective study aims to highlight sensitivity of stress MPI in detection of CAD, incidence of TID & correlation with reversible defects in elderly with associated comorbidities. TID refers to apparent increase in size of LV cavity during stress imaging that is no longer apparent in rest imaging. Lung uptake of myocardial perfusion tracer alone is non-specific for CAD so we assessed associated reversible perfusion defects also.

Materials & Methods:
We analyzed 364 patients with & without previous cardiac events, Age 58 -78 + 4 years, M: F = 227:137 between Jan 2014- 2017. Same day 9mCi stress –27 mCi rest gated MIBI SPECT images were acquired with dual head variable angle Gamma camera. 224/364 (61.5%) patients had associated co morbidities 32.5% (73/224) had diabetes & 31.2% (70/224) had Hypertension while 81 patients (36.2%) had both. Patients unable to perform treadmill exercise were subjected for either adenosine / dobutamine stress MPI. 56% patients had previous cardiac events like MI / revascularisation. CAG correlation was available in most of them.

Results:
TID was scintigraphically noted in 13% (48/364) patients esp. with co morbidities signifying underlying CAD. Range of TID values were 1.12-1.16 in our series. Higher TID thresholds (1.17-1.22) noted in adenosine stress patients. Semiquantitative summed stress and rest scores were determined using a 17-segment, 5-point model. Presence of myocardial ischemia was defined as a summed difference score of 3 (i.e., myocardial ischemia of >4%). 18 patients showed MPI consistent with TVD (CAG correlation in 14). Patients showing MPI result consistent with SVD (proximal LAD) were 24 (CAG correlation in 21). Apparently normal MPI findings were seen in 6 patients. Of them 3 were dilated cardiomyopathy, 2 had Hypertension with LVH,1 balanced TVD (CAG correlation available). Out of 29 previously revascularised patients, only 2 showed significant TID & reversible defects (CAG showed significant lesions in all).

Conclusion:
TID is an important marker in elderly with comorbidities & should be looked for in all pts undergoing stress MPI. It is more closely related in pts with proximal LAD lesions, underlying TVD & associated with significant perfusion defects. It is also found in non CAD conditions like Dilated Cardiomyopathy, HT with LVH where there may not be any significant stress induced myocardial perfusion defects. Early management of CAD will
result in a greater reduction in absolute number of coronary events in elderly, as LVEF along with stress perfusion results are the most powerful predictors of cardiac death.