

Comparison of adenosine-induced myocardial ischemia and atherosclerosis measured by coronary calcium tomography

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Purpose: Coronary artery calcium shows an anatomic information and coronary atherosclerotic burden, but myocardial perfusion SPECT shows a physiologic significance of coronary stenosis and stress induced ischemia. Both are valuable in the noninvasive assessment of patients with suspected coronary artery disease. There has been little evaluation regarding the relationship between CAC and adenosine-induced ischemia and how to integrate CAC with myocardial perfusion SPECT. **Methods:** We assessed the relationship between adenosine-induced myocardial ischemia on myocardial perfusion single-photon emission computed tomography (MPS) and magnitude of coronary calcification (CAC) by MDCT in patients undergoing both tests. A total of 111 patients underwent adenosine-induced MPS and CAC within 2 days. Coronary angiography was done in 55 patients. The frequency of ischemia by MPS was compared to the magnitude of CAC. **Results:** Among 56 patients with ischemic MPS, the CAC scores were >0 in 87.5%, >100 in 76.8%, and >400 in 50.0%. Of 25 normal MPS, the CAC scores were >0 in 70.9%, >100 in 34.5%, and >400 in 14.5%, respectively. Of 38 patients with coronary artery stenosis proved by coronary angiography, the CAC scores were >0 in 92.1%, >100 in 78.9%, and >400 in 50.0%, respectively. Of 12 patients without coronary artery stenosis, the CAC scores were >100 in 66.7%, and >400 in 41.7%. **Conclusion:** Ischemic MPS is associated with a high likelihood of subclinical atherosclerosis by CAC, but it can be also seen for CAC scores <100. The patient without significant coronary artery stenosis, however, may have extensive atherosclerosis by CAC criteria. Although, low CAC scores appear to obviate the need for subsequent testing, but MPS is still needed to diagnose the myocardial ischemia.

Comparison of Myocardial Function between Post-menopausal and Pre-menopausal Women: Evaluation by Gated Myocardial SPECT

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Purpose: In addition to inhibiting coronary atherosclerosis, estrogen is expected to have protective effects on cardiac myocytes. We investigated the difference in myocardial functional parameters evaluated by gated myocardial SPECT after adenosine-stress between post-menopausal and pre-menopausal healthy women. **Methods:** This study included 22 healthy post-menopausal women (mean age: 53.0 yr) and 20 pre-menopausal women (mean age: 43.0 yr) who performed Tc-99m tetrofosmin gated myocardial SPECT after adenosine-stress. Measured hemodynamic parameters, EDV, ESV, stroke volume, EF, cardiac output and cardiac index were compared between the two groups. For comparison, similar-aged two male groups with matched numbers were also studied. **Results:** There was no significant difference in hemodynamic parameters, EDV, ESV, stroke volume, EF, or cardiac output between the post-menopausal and pre-menopausal women. However, post-menopausal women have a smaller cardiac index (mean: 1.95 L/min/m² vs 2.20 L/min/m²; p=0.045) and adenosine-induced HR increase (mean: 80.5/min vs 89.7/min; p=0.03), compared to the pre-menopausal women. On the contrary, the two male groups of the same age range and numbers with the women groups showed no significant difference in any myocardial parameters. **Conclusion:** These results suggest that menopause may be correlated with reduced increase in cardiac index and HR increase after adenosine-stress.