Myocardial Perfusion Scintigraphy: Assessment of Myocardial Ischemia and Independent Predicting Factors in Patients Without Previously Proven Coronary Artery Disease

Background: The aim of the study was to analyze the influence of individual risk factors and the incidence of myocardial ischemia diagnosed by myocardial perfusion scintigraphy (MPS) in patients with risk factors for coronary artery disease (CAD) but without a history of previously proven CAD.

Methodology: In period from 2008 to 2012, 801 patients (451 women, 350 men, aged from 28-83 years, mean 61.9±7.7 years) underwent MPS in our institution. All patients underwent a 2-day protocol that includes stress and rest study. In patients with negative stress MPS study, the remainder was omitted. The stress study was completed using exercise-dipyridamole combined test. Dypiridamol was intravenously injected in a dose of 0.56 mg/kg over 4 minute. During the dypiridamole infusion, patients were monitored for blood pressure, heart rate, rhythm and ECG changes. The stress test is continued with a 3-minute low level exercise of 25 W by bicycle ergometer and followed by 99mTc-MIBI injection (activity of 740 MBg). MPS was performed on dual head SPECT (E-CAM and SYMBIA, Siemens) gamma cameras. Multivariate logistic regression analyzed each risk factor and calculated the statistical significance on total model prediction.

Results: A positive MPS accounts for 18.1% of all studied patients. Significant ischemia (defined if >10% of the left ventricle is involved) was detected in 10.7% of patients. The most common type, reversible ischemia was detected in 73.8%, while the anteroseptal wall was the most usual site of ischemia (detected in 44.1%). Independent predicting factors for positive MP were: male gender, type 2 of diabetes mellitus (DM), smoking habit, elevated total cholesterol and obesity. The model predicting positive MPS in patients without CAD has a sensitivity of 77.9%, a specificity of 62.2% and a positive predictive value of 65%.

Conclusion: The prediction model based on gender and risk factors (type 2 DM, total cholesterol, body mass index and smoking habit) may predict positive MPS in patients with risk factors and without proven CAD with high sensitivity and moderate specificity.

Country/Organization invited to participate

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