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## **ROLE OF LONG-LASTING LEFT VENTRICULAR DYSFUNCTION ASSESSED BY STRESS GATED MYOCARDIAL PERFUSION SCINTIGRAPHY IN THE EVALUATION OF CORONARY ARTERY DISEASE SEVERITY**

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### **BACKGROUND-AIM**

Transient left ventricular dilation is a well-known marker for coronary artery disease (CAD). However only a few data correlating severity and behavior over time of post-ischemic stunning with CAD extension are available. Therefore the purpose of this study was to evaluate the relationship among the duration of left ventricular contractile dysfunction induced by physical effort, the extent of reversible defects and the number of coronary vessels involved in the atherosclerotic process.

### **METHODS**

The study population consisted of 274 patients (113 women and 161 men, mean age 64±9 years) showing at least one reversible perfusion defect (Summed Difference Score SDS>3) during a separate day rest/stress Tc-99m sestamibi gated-SPECT myocardial scintigraphy, clinically indicated for suspected CAD. All subjects underwent physical exercise and stress images were acquired 15 minutes after tracer injection. In patients with a reduction of left ventricular ejection fraction (LVEF) more than 5% in comparison with rest data a second gated-SPECT acquisition was performed at 60 minutes. All patients underwent coronary angiography within 3 months of gated SPECT studies.

### **RESULTS**

On the basis of scintigraphic results, subjects were divided as follows: group A (126 patients) “no evidence of LVEF decrease after stress or less than 5%”; group B (95 patients) “decrease of LVEF >5% only in early stress acquisition”; group C (53 patients) “evidence of decrease of LVEF >5% both in early and late post-stress studies”. The comparison between coronary anatomy findings and gated-SPECT data showed that 73% of subjects with not significant or single vessel CAD were in group A, 69% with two vessels disease belonged to group B and 72% with left-main or three vessels involvement were included in group C. In particular only 6% of group A patients had multivessel disease. Moreover SDS were significantly higher ( $P<.0001$ ) in both group B ( $7.1\pm 6.2$ ) and C ( $9.8\pm 7.3$ ) in comparison to group A ( $3.5\pm 4.1$ ) patients. Finally the multivariate analysis revealed that the combination of SDS, long-lasting post-stress left ventricular dysfunction, and diabetes mellitus best identified multivessel CAD, with a sensitivity of 82% and a specificity of 85% ( $\alpha 2, 82.7$ ).

### **CONCLUSION**

The results of this study support the hypothesis that sustained left ventricular functional abnormalities after exercise stress as assessed by gated-SPECT may significantly contribute to the identification of multivessel disease, a high-risk subset of CAD. Larger prospective trials are needed to confirm these preliminary findings and to assess their potential impact on clinical practice.