

OBSERVATIONS

Screening of Silent Myocardial Ischemia in Type 2 Diabetic Patients

A randomized trial comparing isotopic and echocardiographic stress tests

The prevalence of silent myocardial ischemia (SMI) is more frequent in diabetic patients and is associated with a worse prognosis (1). In order to prevent adverse cardiac events, current guidelines recommend detection of asymptomatic coronary artery disease (CAD) in type 2 diabetic patients with high cardiovascular (CV) risk (2,3). The ECG stress test is recommended but frequently inconclusive in type 2 diabetic patients.

This study aimed to compare stress thallium-201 single photon emission computed tomography (SPECT) with dobutamine echocardiography (DE) for the screening of SMI and CAD in type 2 diabetic patients.

The study was designed with 55 and 30% anticipated rates of positive SPECT and DE, respectively, and a 23% rate of significant CAD in each group. With this hypothesis, anticipated positive predictive values for the detection of significant CAD were 76 and 42% for SPECT and DE, respectively. We estimated that 100 patients would be required in each group to have a power of 84% to detect the difference between SPECT and DE with a two-sided α of 0.05.

A total of 204 asymptomatic type 2 diabetic patients at high CV risk were prospectively randomized between SPECT ($n = 104$) and DE ($n = 100$). A coronary

angiogram was proposed in case of SMI, with revascularization for suitable lesions. Intensive treatment of CV risk factors was performed in all patients. Death and myocardial infarction (MI) were recorded during a 3-year follow-up. Clinical characteristics were similar in the two groups. The prevalence of SMI and significant CAD, respectively, were 15 and 4% in the SPECT group versus 13 and 6% in the DE group (NS). Positive predictive values for the detection of significant CAD were 31% for SPECT and 50% for DE (NS). Seven patients (3%) had initial revascularization. The 3-year rate of CV death and MI was 2.5% in both groups.

In our study, 93% of the patients were selected according to American College of Cardiology and American Diabetes Association criteria for CV risk and type 2 diabetes, respectively. Despite a mean of 2.9 risk factors in addition to age, sex, and diabetes, the annual rate of cardiac death from MI was less than 1%, whatever the stress test used. Only 3% of our patients underwent revascularization, mainly for single vessel disease, which suggests that inclusion criteria to screen SMI in the setting of intensive care of cardiac risk factors are not strong enough. SMI screening, as well as revascularization in diabetic patients at low cardiac risk with optimal medical treatment, does not reduce the risk of major cardiac events (4,5). Our study confirms the good prognosis of diabetic patients, even with numerous cardiac risk factors, and does not support the usefulness of systematic SMI screening when these risk factors are intensively treated.

In conclusion, SPECT or DE can be used in type 2 diabetic patients with the same efficiency to detect SMI. Diabetic patients in whom SMI screening and revascularization could reduce cardiac events must be identified.

SOPHIE JACQUEMINET, MD¹
OLIVIER BARTHÉLÉMY, MD²
CLAUDE LE FEUVRE, MD, FESC²

From the ¹Service de Diabétologie, Groupe Hospitalier Pitié-Salpêtrière, AP-HP, Paris, France; and the ²Institut de Cardiologie, Groupe Hospitalier Pitié-Salpêtrière, AP-HP, Paris France.

Corresponding author: Claude Le Feuvre, claude.lefeuvre@psl.aphp.fr.

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