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The CRISO project-case report

Aims & objectives: The **CRISO project** "Coronary Risk Prevention in Siblings and Offspring of Patients with Premature Coronary Heart Disease" is aimed to develop a preventive program for a **potential risk group**. The CRISO program facilitates an environment for opportunistic screening, improves professional contact and encourages first-degree relatives to seek risk assessment and support to modify risk.

We present the case of a 62-year-old non-smoker Maltese man attending the CRISO program with no previous cardiovascular disease or type 2 diabetes. He had a sedentary lifestyle but a good diet. During the study, his office blood pressure was 137/83 mmHg, and his heart rate was 83 b/m. His lipid profile on statin therapy showed total cholesterol of 4.9, LDL-c of 2.7, HDL-c of 1.4, and triglycerides of 1.9 mmol/l. His mean glycated haemoglobin A1c was 5.6%, and serum uric acid was 449 µmol/L. His BMI was 33.6 kg/m^2, and his waist circumference did not meet European Society of Cardiology guidelines for European men (>94cm). The Score2 estimated his 10-year risk of myocardial infarction, stroke or CVD death at **7.3%**, classifying him as high-risk (50-69 years; 5 to <10%).

Methodology

In part of the program, the Score2 calculator was applied to stratify risk into 2 categories; low to moderate or high risk of having a fatal and non-fatal cardiovascular event in the next ten years. Using Score2, this patient was stratified as a high-risk patient. To better evaluate his risk profile, he was offered to undertake myocardial perfusion scintigraphy. Myocardial perfusion scintigraphy was performed following intravenous administration of Tc 99m MIBI at peak stress and again at rest. Gated SPECT acquisition and standard three-plane reconstruction were performed to determine the extent of cardiac ischaemia. The scan was performed at the Nuclear Medicine, Medical Imaging Department at Mater Dei Hospital. The radiologists interpreted the myocardial perfusion scintigraphy with details of localisation, size and severity of the ischaemic area. The location was determined according to the coronary vascular territory likely to be involved. The number of affected wall segments determined the ischaemic percentage estimate burden. These were categorised into 3; 1-5% (no abnormality detected), 5-10% (mild ischaemia), and **>10%** (**extensive ischaemia**). The images taken at rest were compared with the stress images to assess the reversibility of the defect of the tracer uptake.

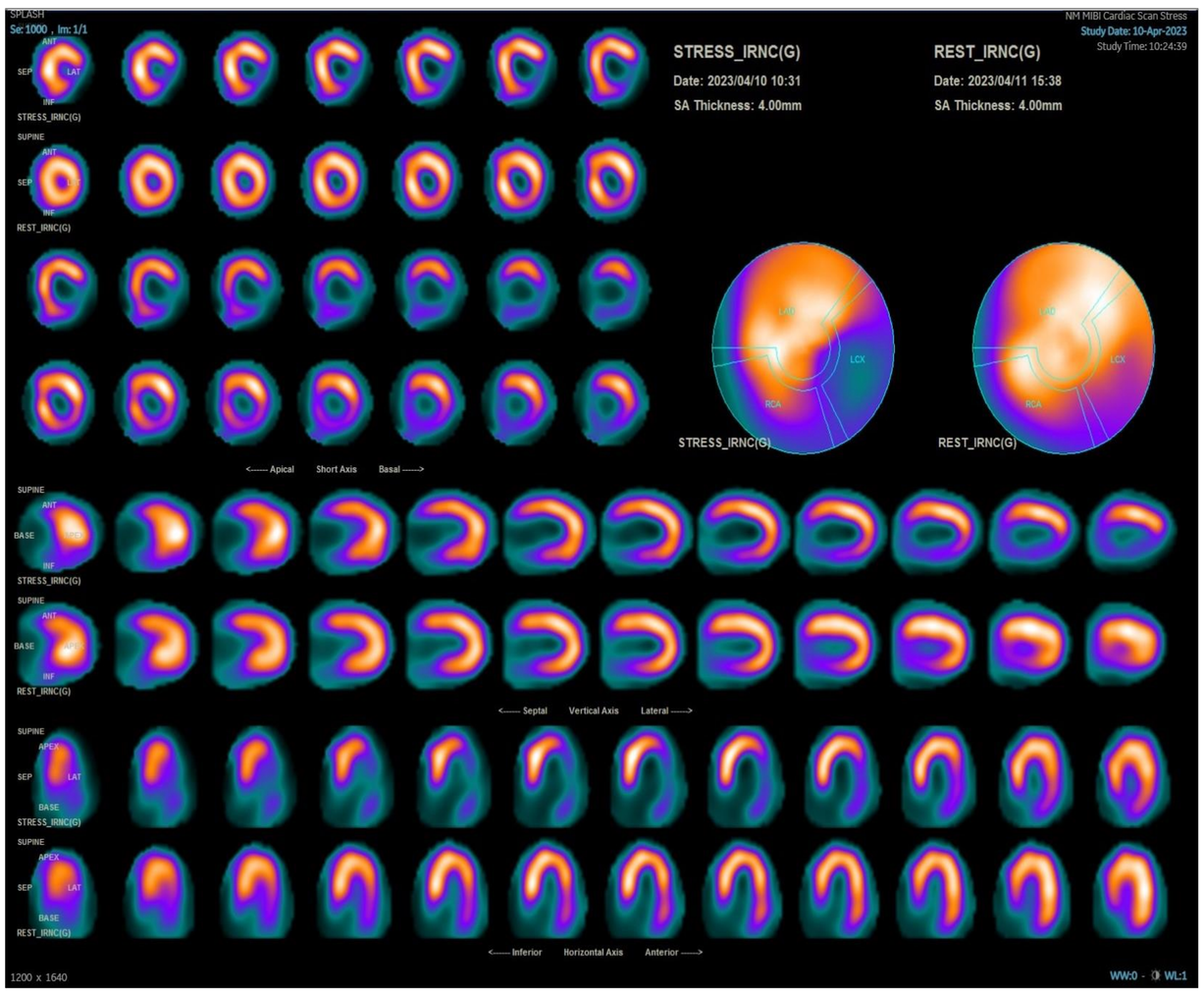

Figure 1. Stress-Rest MIBI SPECT images showing perfusion defects in the inferolateral segment

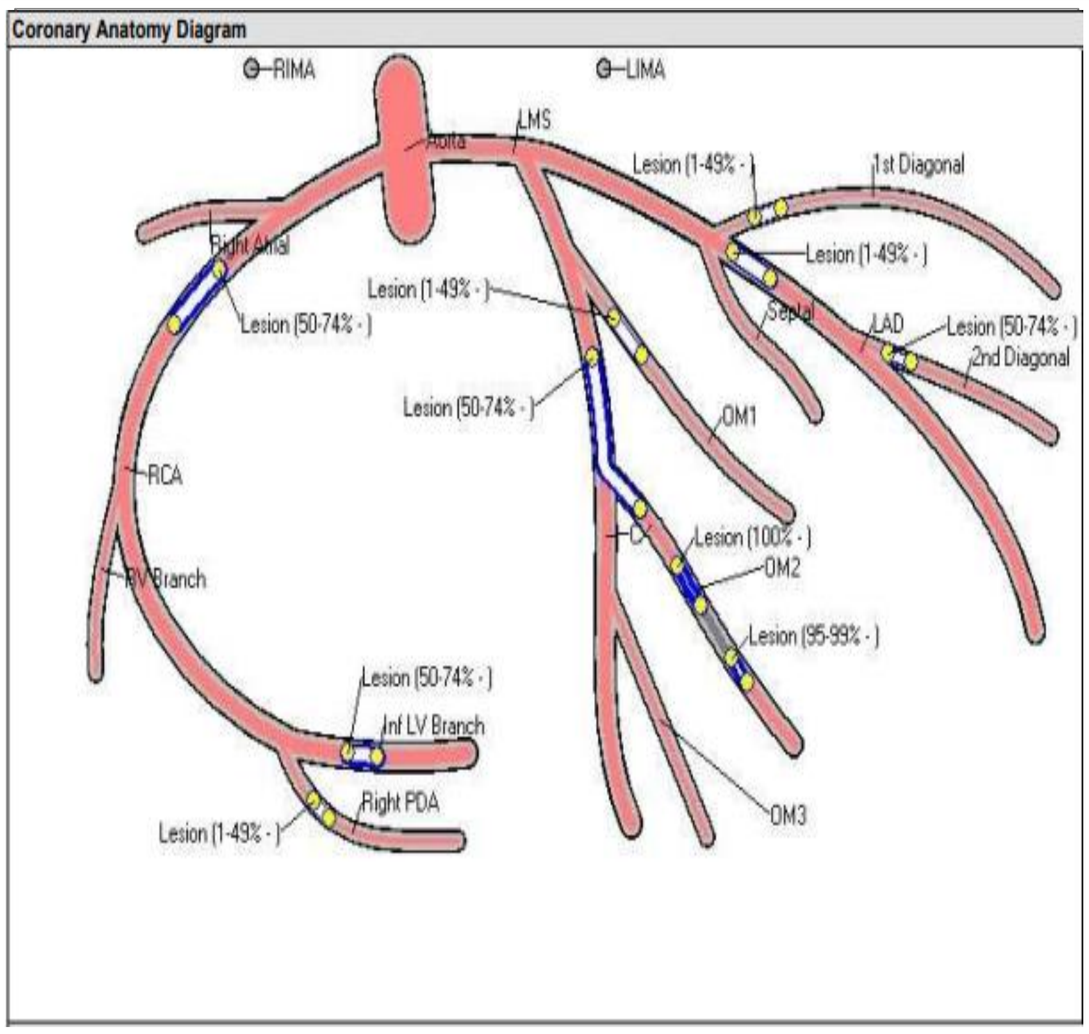

Figure 2. Coronary anatomy diagram showing lesion location and % estimate disease burden

Results & Conclusions

At maximal exercise stress test (Bruce protocol stage 3), prolonged ST-segment depression developed, although the patient was asymptomatic. Images obtained after the exercise stress test showed an extensive tracer uptake defect in the myocardium's inferolateral segment with almost complete reversibility on rest imaging (Fig 1). Wall motion analysis revealed stress-induced hypokinesia with reduced ejection fraction on stress testing, reverting to normal on rest imaging. The ischaemic percentage estimate burden was **>10%** in the left circumflex artery territory with associated stress-induced hypokinesia and a drop in ejection fraction.

The patient was referred for urgent angiography, which revealed **80% diffuse disease in the main left circumflex** (LCx) between the 1st and 2nd obtuse marginal branches (OM1&2). **OM1** and **OM2** were diseased with **30%** and **100% lesions,** respectively. The chronic total occlusion (CTO) of OM2 had bridging collaterals. There was also mild to moderate disease in the right coronary artery (RCA) and left anterior descending (LAD) territory (Fig 2).

Successful PCI to LCx, OM2 lesions, including CTO with 3 drug-eluting stents.

This patient illustrates the value of preventive cardiology programmes such as the CRISO project. An asymptomatic patient was identified as a high-risk patient for ischaemic heart disease. The timely intervention saved the patient from possible myocardial infarction and death.