

Case Study

Evaluation of Single Vessel Coronary Artery Disease with IQ•SPECT

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Data courtesy of Hospital St. Laval, Laval, Quebec, Canada

History

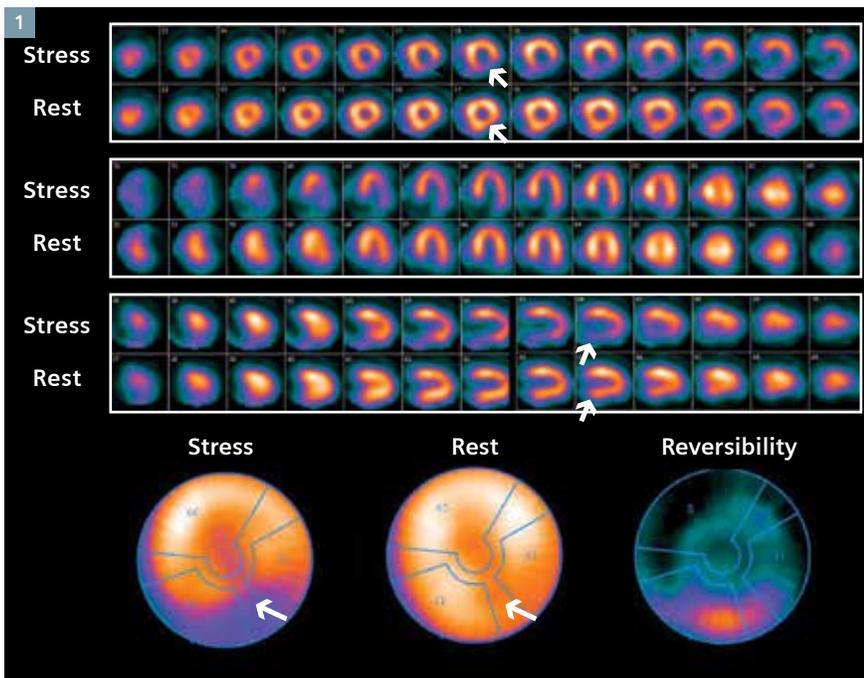
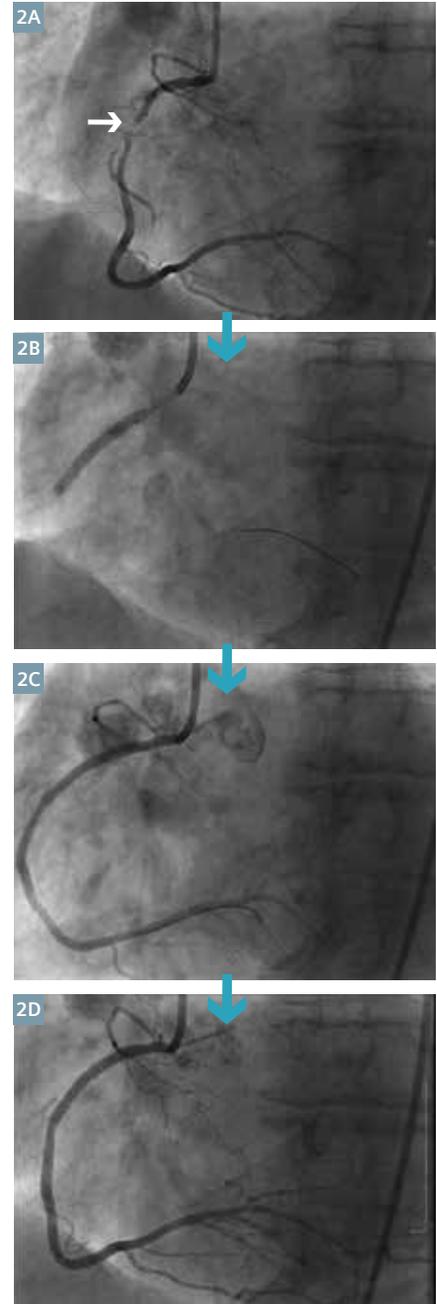
An asymptomatic 80-year-old female (61 kg/134 lbs) with previously diagnosed mild Coronary Artery Disease (CAD) presented with complaints of exertional dyspnea. The patient had an angiography in 1998, which showed 50% stenosis of the left main coronary artery for which the patient preferred medical therapy and non-invasive follow-up. The last myocardial perfusion imaging (MPI) pharmacologic stress study in May 2010 was normal (not shown).

The patient underwent Technetium sestamibi (^{99m}Tc MIBI) myocardial perfusion SPECT in January 2012 using IQ•SPECT performed on a Symbia™ T2 SPECT•CT system.

Evaluation

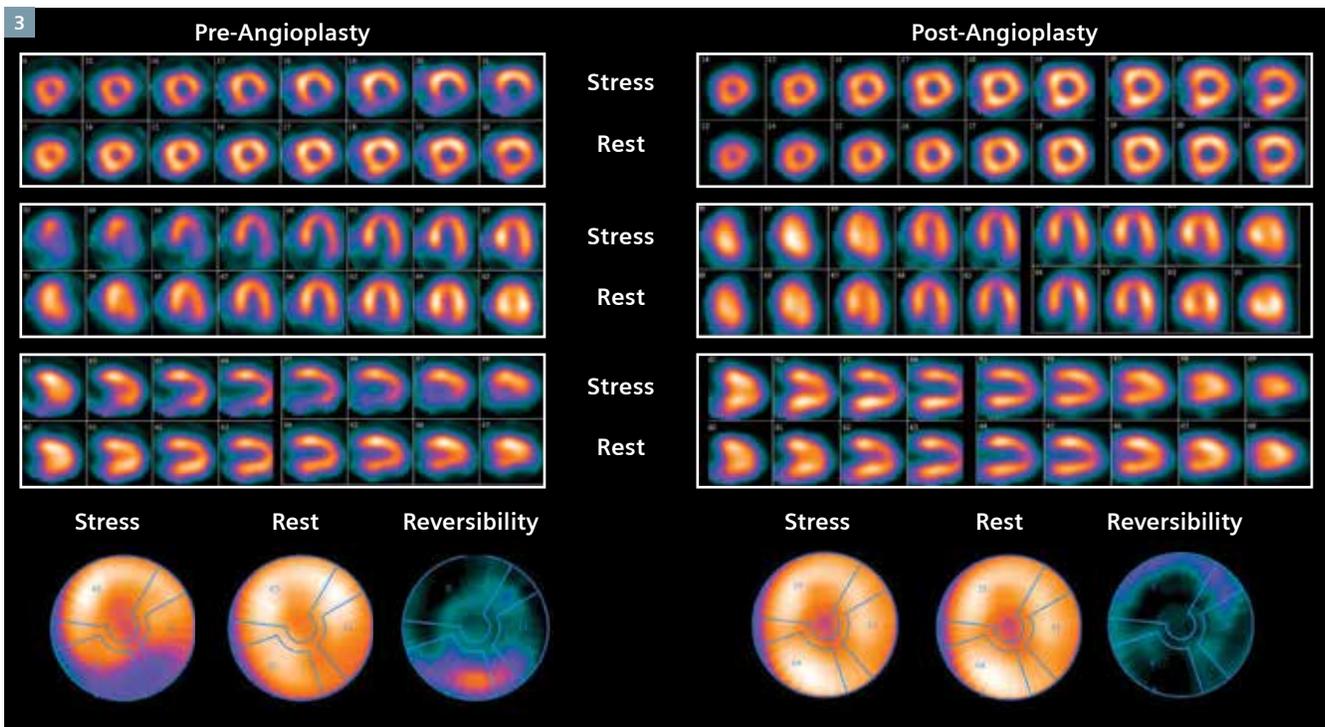
An IQ•SPECT MPI performed using dipyridamole stress and rest in January 2012, showed new severe and extensive, but reversible perfusion defect in the inferolateral and inferobasal wall (proximal right coronary artery territory). There was no significant post-stress left ventricle (LV) dilatation (normal TID). Resting left ventricle ejection fraction (LVEF) was normal and showed normal response to stress. There were no significant EKG changes during the dipyridamole stress test.

In view of the severe reversible ischemia in the right coronary artery (RCA) territory in a patient with known 50% left main coronary artery stenosis, a coronary angiogram was ordered.



1 An IQ•SPECT study with CT attenuation correction showing reversible inferolateral perfusion defect.

2 Coronary angiography showing proximal RCA stenosis, which was subsequently angioplastied.



3 A comparison of IQ•SPECT MPI studies with CTAC before and 1 year after angioplasty to proximal RCA stenosis shows complete resolution of inferolateral perfusion defect following PCI.

A coronary angiography revealed 40-50% distal left main stenosis, which reflects stable CAD since 1998. There was a new and severe, 95% proximal right coronary subocclusion, exactly as suspected by MPI, which was the culprit lesion. Excellent restoration of RCA flow with no residual stenosis was obtained after angioplasty.

The patient presented subsequently with atypical and mostly epigastric pain and underwent a follow-up MPI study using IQ•SPECT with the same protocol in January 2013, which showed complete resolution of ischemia.

Examination Protocol

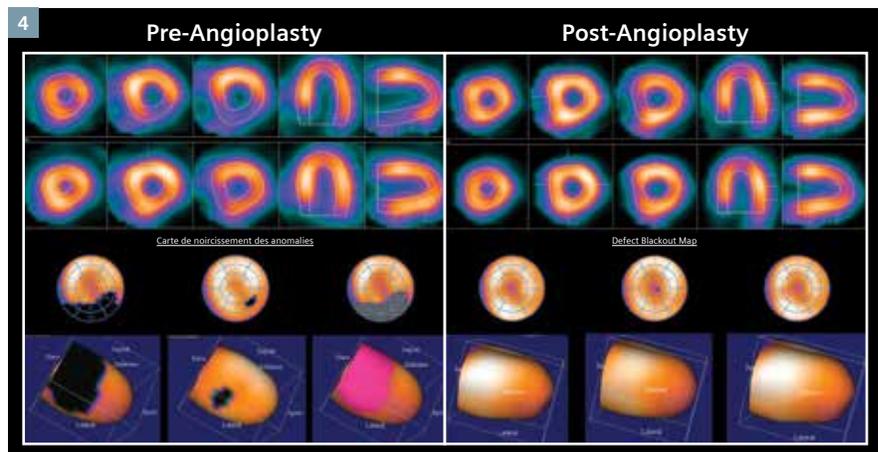
Scanner	Symbia T2 SPECT•CT
Scan dose	25 mCi ^{99m} Tc sestamibi
Parameters	17 frames 9 sec/frame
CT	Low-dose CT for attenuation correction

The statements by Siemens' customers described herein are based on results that were achieved in the customer's unique setting. Since there is no "typical" hospital and many variables exist (e.g., hospital size, case mix, level of IT adoption) there can be no guarantee that other customers will achieve the same results.

Comments

This case example clearly defines the value of stress rest myocardial perfusion scintigraphy in detecting inducible ischemia, guiding the subsequent decision for coronary angiography and stenting of proximal RCA stenosis. A follow-up perfusion study also defined complete resolution of ischemia with

normalization of perfusion pattern, which correlated well with resolution of clinical symptoms. With fast cardiac MPI acquisitions of just 4 minutes using IQ•SPECT, there is further improvement in patients' tolerance levels for myocardial perfusion studies. This is particularly so in elderly patients, as shown in this case.



4 Polar plots and volume renderings of MPI studies before and following angioplasty show the extent of inferolateral and inferobasal ischemia related to proximal RCA stenosis with complete resolution of ischemia following angioplasty.