

Left main coronary artery stenosis undetected by 64-slice computed tomography: a word of caution

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A 56-year-old man with a history of stent insertion in the circumflex artery two years before presented to the hospital with recurrent symptoms of angina. A 64-slice computed tomography scan was performed revealing mild in-stent and post-stent restenosis but no clear explanation for the symptoms. Coronary angiography demonstrated a severe localised stenosis of the left main coronary artery, not detected on multi-slice computed tomography, and subsequent angioplasty and placement of two stents obtained a good result. (*Neth Heart J* 2007;15:255-6.)

Keywords: multi-slice computed tomography, coronary angiography, stents, left main disease

A 56-year-old man was referred to our hospital because of exercise-related chest discomfort suggestive of angina. Two years before, a bare metal stent (3.0 diameter, 12 mm length) was inserted in the circumflex artery in another hospital. The patient had been free of symptoms for 18 months.

The ECG was normal at rest but an exercise test revealed ST-segment changes suggestive of cardiac ischaemia. As the patient had experienced the previous invasive cardiac procedures as very painful, he expressed his preference for non-invasive coronary imaging. It was decided to perform multi-slice computed tomography (MSCT, 64-slice CT, Philips Medical Systems). Only mild in-stent and post-stent restenosis of approximately 50 to 60% was seen in the circumflex artery, without

further signs of significant stenosis in the epicardial vessels. A slight irregularity at the ostium of the left main coronary artery was appreciated but was not identified as a significant lesion (figures 1A and B). Because of the discrepancy between these findings and the typical symptoms, it was decided to perform coronary angiography. A severe localised stenosis of the left main coronary artery was detected, even after multiple intracoronary injections of 0.4 mg of nitroglycerin (figure 2). In the same session a coronary drug-eluting stent (Cypher, 4.0 diameter, 13 mm length) was inserted in the left main coronary artery after pre-dilatation with a 3.5 balloon. The stenosis in the circumflex artery was treated with a Cypher stent, 23 mm in length and a diameter of 3.0 mm. The initial result was excellent (figure 2) and now, nine months after this procedure, the patient is doing well and is free of anginal symptoms.

Discussion

Investigators recently reported that MSCT was able to detect significant coronary artery disease but could also identify nonsignificant coronary soft plaques that may even be responsible for acute myocardial

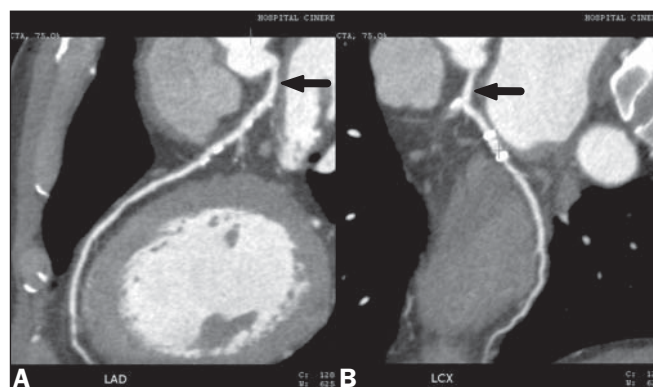


Figure 1 (A and B). A 64-slice computed tomography did not elucidate a stenosis or significant lesion in the left main coronary artery, although a slight irregularity was appreciated (arrows). The stent in the circumflex artery is clearly visible and the segment just after the stent was judged to be narrowed by 50 to 60%.

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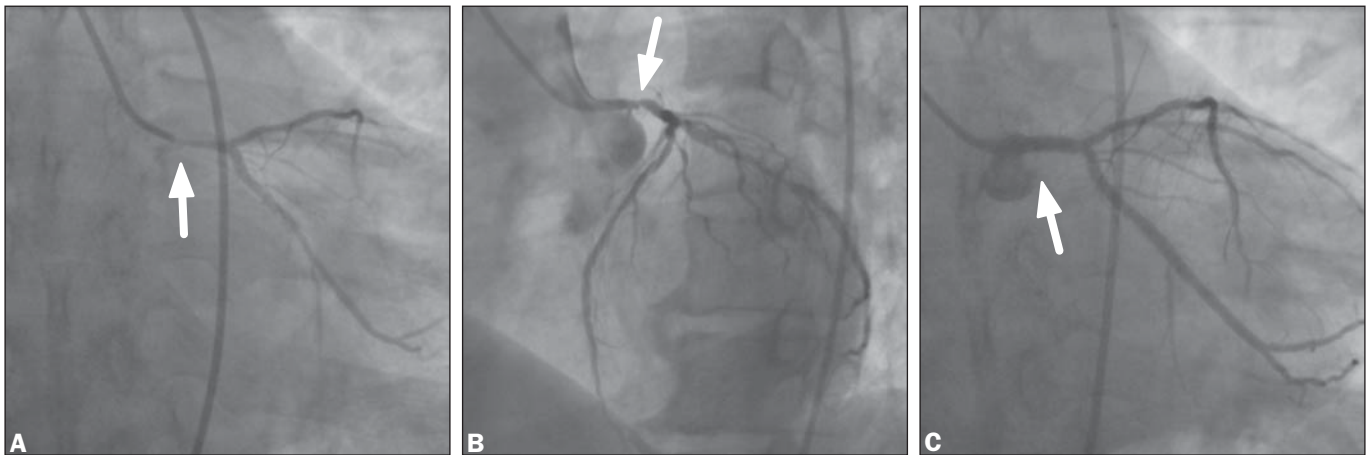


Figure 2. (A) The caudal view of the left main coronary artery lesion (indicated by arrows). (B) The left anterior oblique view revealing the same lesion (after 2 x 0.4 mg of nitroglycerin). (C) The caudal view after insertion of the 4.0 Cypher stent and a 3.0 in the circumflex artery.

infarction. Furthermore, it provides information on plaque volume, eccentricity, and density.¹⁻⁵ However, as this case clearly demonstrates, we should be cautious before excluding significant coronary artery disease on MSCT alone, especially in patients who have had a previous coronary event and in whom coronary artery disease has already been diagnosed. The evolution of scanning systems offering 64-slice capabilities is a step forward in the reliability of CT coronary angiography, but some segments are not suitable for interpretation with MSCT, such as those that cannot be interpreted due to calcification or motion and for other reasons most likely related to the spatial image resolution of current equipment.

The potential of MSCT to detect coronary atherosclerotic plaque in patients with significant coronary stenosis is obvious. However, further improvements in image quality will be necessary to achieve reliable assessment in coronary artery disease. ■

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