Deadly soft plaque detected by coronary multislice computed tomography

Détection d’une plaque coronaire mortelle en scanographie multicoupe

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A 43-year-old woman with a history of atypical chest pain was admitted to the intensive care unit for resuscitated sudden death related to anterior myocardial infarction and ventricular fibrillation. Her 10-year Framingham risk score was 2%. An occlusion of the left anterior descending (LAD) coronary artery just after the second diagonal branch was diagnosed on coronary angiography (Fig. 1A, white arrow). Rescue coronary angioplasty was performed immediately, revealing an atherosclerotic plaque on the occlusion site, and a stent was implanted (Figs. 1B and C). The patient recovered completely and was discharged home.

One month earlier, the patient had undergone a normal treadmill exercise test and a coronary multislice computed tomography (CT) scan for atypical chest pain, revealing an isolated non-calcified, non-significant coronary soft plaque localized in the middle portion of the LAD coronary artery (Fig. 1D, yellow arrow). The rest of the coronary tree was normal, with no other lesions (Fig. 1E). The location of the plaque was related closely to the site of the acute coronary thrombosis.

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Figure 1. Analysis of left anterior descending (LAD) coronary artery by: (A–C) coronary angiography (from LAD occlusion [A, arrow], first balloon inflation revealing an atherosclerotic plaque on the occlusion site [B, arrow], to stent implantation [C]); (D–E) coronary CT with detected coronary soft plaque (D, yellow arrow) versus the normal coronary pattern (E); and (F) three-dimensional reconstructed coronary CT.

to the site of subsequent occlusion, as demonstrated by three-dimensional reconstructed coronary CT (Fig. 1F). The CT scan was performed using 120 kV and 200 mAs, using electrocardiographic dose modulation. The dose length product was 420 mGy cm, accounting for a radiation dose of 8.5 mSv.

Atherosclerotic plaque rupture followed by thrombus formation is the main mechanism of myocardial infarction, and non-haemodynamically significant coronary lesions may cause these acute events. Coronary multislice CT could be of interest for the detection of deadly soft plaques complicated by myocardial infarction and sudden death. However, all non-calcified plaques on CT are not at risk for rupture. These plaques are very common and do not lead to acute myocardial infarction in the majority of patients.

Conflict of interests

None.