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IMAGES IN CARDIOLOGY

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Myocardial infarction caused by distal embolisation of a ruptured left main plaque

A 54-year-old man presented with a non-ST elevation myocardial infarction. Coronary angiography demonstrated a hazy appearance of the distal left main (LM) stem, and a thrombotic subtotal occlusion of the distal left anterior descending (LAD) artery with TIMI grade 1 flow (lower left panel, A, B). He was discharged following conservative management with antiplatelet treatment; however, he experienced ongoing exertional angina. Repeat angiography four weeks later demonstrated an ulcerated plaque in the distal LM stem, and a patent LAD with normal antegrade flow. There was no angiographic disease at the site of previous occlusion. Intravascular ultrasound (IVUS) was performed demonstrating a large perforated plaque in the distal LM (upper right panel, A–C). Blood speckle was seen within the plaque, suggesting a recent plaque rupture with embolisation of its contents. It was felt the ruptured plaque may provide a substrate for further thrombotic and/or embolic events. Percutaneous coronary intervention was performed with a 5.0 × 20 mm Taxus stent (Boston Scientific, Massachusetts, USA) deployed in the distal LM and proximal LAD achieving an excellent angiographic and IVUS result (lower right panel, A–C).

Rupture of an atheromatous plaque may cause localised thrombus formation at the site of plaque rupture. Alternatively, as demonstrated in this case, thrombus may embolise causing coronary occlusion downstream in the dependent vascular territory. When investigating patients with acute coronary syndromes the possibility of downstream embolisation from proximal plaque disease should be considered. Further development of technology able to target lipid-rich vulnerable plaque may have a role in predicting plaque rupture and acute cardiac ischaemia.

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(A) Left anterior oblique cranial view demonstrating distal occlusion of the left anterior descending artery (LAD) (black arrow). There is a hazy appearance of the distal left main (LM) (white arrow). (B) Right anterior oblique caudal projection showing a filling defect in the distal LAD attributed to thrombus (double arrow).

The filling defect in the LAD has resolved and the vessel is now patent. A small ulcerated plaque is seen in the distal LM (arrow). Intravascular ultrasound (IVUS) examination revealed a large plaque in the distal LM (B). The IVUS catheter is visible within the narrowed lumen, separated from the plaque by a thin fenestrated septum. Blood speckle is seen within the plaque (asterisk) suggesting prior rupture and embolisation of plaque contents. The proximal LM (A) and left anterior descending artery (LAD) (C) are only minimally diseased.

Repeat angiography demonstrates an excellent result. IVUS examination shows an intact proximal LM (A) and confirms obliteration of the "plaque lumen" with good stent apposition in the distal LM (B) and proximal LAD (C).