

Images in Cardiology

Unusually aggressive immature neo-intimal hyperplasia causing in-stent restenosis

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Abstract

This image illustrates a very unusual pattern of early and aggressive immature neo-intimal hyperplasia in a 52-year-old man with unstable angina, two months after deployment of a drug-eluting stent in the proximal left anterior descending artery.

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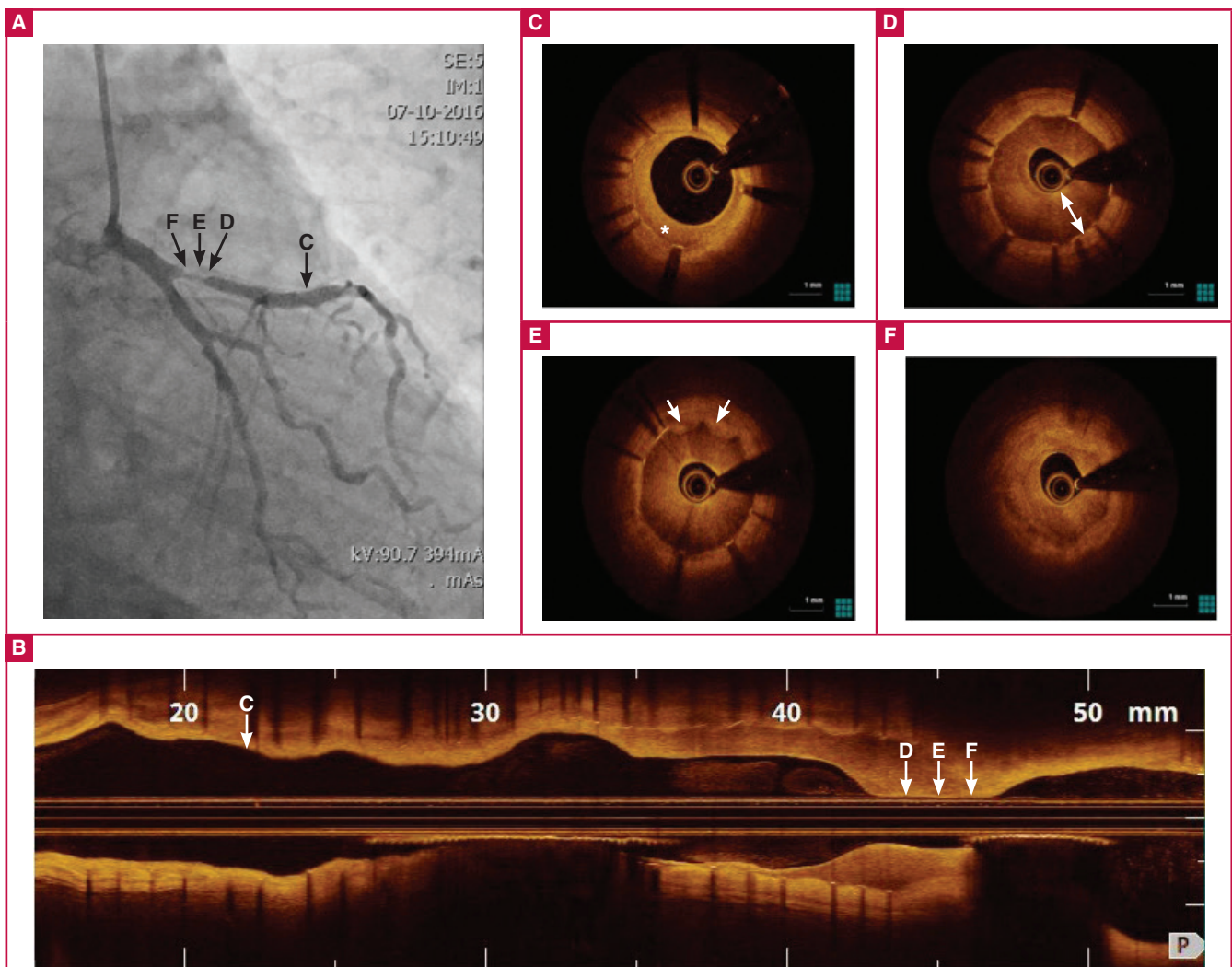


Fig. 1. A: Still frame of left coronary angiography showing restenosis in the proximal LAD. Letters in black correspond with the optical coherence tomography (OCT) images that follow. B–F: OCT from distal to proximal left anterior descending (LAD) and left main-stem demonstrating mature neo-intimal hyperplasia in mid-LAD stent (C, asterisk), aggressive immature neo-intimal hyperplasia in the proximal LAD stent (D, double arrowhead line) with tissue protrusion (E, arrowheads) and stent edge vascular response (F).

Keywords: in-stent restenosis, neo-intimal hyperplasia, optical coherence tomography

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A 52-year old man was admitted with unstable angina two months after deployment of a drug-eluting stent (DES) in the proximal left anterior descending (LAD) artery. Five months prior to the current admission he had undergone percutaneous coronary intervention (PCI) with a DES to his proximal right, proximal circumflex and mid-LAD coronary arteries. The patient had no cardiovascular risk factors apart from a family history of premature coronary artery disease.

Coronary angiography demonstrated in-stent restenosis of the proximal LAD stent (Fig. 1A). Optical coherence tomography (OCT) demonstrated various tissue responses to stent implantation (Fig. 1B). High-signal, smooth muscle-rich

mature neo-intimal hyperplasia was present within the stent in the mid-LAD (Fig. 1C; asterisk) whereas signal-poor homogeneous aggressive immature neo-intimal hyperplasia was present at the level of the proximal stent edge, causing sub-total occlusion (Fig. 1D; double arrowhead line), with tissue protrusion clearly visible below the immature neo-intimal hyperplasia in certain frames (Fig. 1E; arrowheads). Proximal to the stent, an inhomogeneous-edge vascular response was observed (Fig. 1F). The focal restenosis in the proximal stent segment was treated with another DES and post-dilated with a non-compliant balloon with a good angiographic result (not shown).

This image illustrates a very unusual pattern of early and aggressive immature neo-intimal hyperplasia. Although immature neo-intimal hyperplasia has been described,¹ to our knowledge this is the first image of such aggressive immature neo-intimal hyperplasia.

Reference

1. Malle C, Tada T, Steigerwald K, *et al.* Tissue characterization after drug-eluting stent implantation using optical coherence tomography. *Arterioscler Thromb Vasc Biol* 2013; **33**: 1376–1383.

Treatment of heart attack patients depends on history of cancer

Treatment of heart attack patients depends on their history of cancer, according to research published recently in *European Heart Journal: Acute Cardiovascular Care*. The study in more than 35 000 heart attack patients found they were less likely to receive recommended drugs and interventions and more likely to die in hospital if they had cancer than if they did not.

‘It is well known that cancer patients may have an increased risk of cardiovascular disease as a result of their treatment’, said senior author Dr Dragana Radovanovic, head of the AMIS Plus Data Centre in Zurich, Switzerland. ‘However, on the other hand, little is known about the treatment and outcomes of cancer patients who have an acute myocardial infarction.’

This study investigated whether acute myocardial infarction patients with a history of cancer received the same guideline-recommended treatment and had the same in-hospital outcomes as those without cancer. The study included 35 249 patients enrolled in the Acute Myocardial Infarction in Switzerland (AMIS Plus) registry between 2002 and mid-2015. Of those, 1 981 (5.6%) had a history of cancer.

Propensity score matching was used to create two groups of 1 981 patients each – one with a cancer history and one without – that were matched for age, gender and cardiovascular risk factors. The researchers compared the proportions of patients in each group who received specific immediate drug therapies for acute myocardial infarction, and percutaneous coronary intervention (PCI) to open blocked arteries. They also compared the rates of in-hospital

complications and death between the two groups.

The researchers found that cancer patients underwent PCI less frequently [odds ratio (OR) 0.76; 95% confidence interval (CI): 0.67–0.88] and received P2Y12 blockers (OR 0.82; 95% CI: 0.71–0.94) and statins (OR 0.87; 95% CI: 0.76–0.99) less frequently. In-hospital mortality rate was significantly higher in patients with cancer than those without (10.7 vs 7.6%; OR 1.45; 95% CI: 1.17–1.81).

Patients with a history of cancer were more likely to have complications while in hospital. They had 44% higher odds of cardiogenic shock, 47% higher chance of bleeding and 67% greater odds of developing heart failure than those with no history of cancer.

Dr Radovanovic said: ‘Patients with a history of cancer were less likely to receive evidence-based treatments for myocardial infarction. They were 24% less likely to undergo PCI, 18% less likely to receive P2Y12 antagonists and 13% less likely to receive statins. They also had more complications and were 45% more likely to die while in hospital.’

‘More research is needed to find out why cancer patients receive suboptimal treatment for myocardial infarction and have poorer outcomes’, continued Dr Radovanovic. ‘Possible reasons could be the type and stage of cancer, or severe co-morbidities. Some cancer patients may have a very limited life expectancy and refuse treatment for myocardial infarction’, she added.

Source: European Society of Cardiology Press Office