

Chest pain and plaque rupture without high-sensitive troponin elevation

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A 41-year-old male with established coronary artery disease and previous ST-elevation myocardial infarction requiring treatment of the right coronary artery (RCA) with a drug eluting stent (DES) presented to the emergency department with acute-onset typical angina (Canadian Cardiovascular Society IV). Electrocardiogram and clinical examination were unremarkable. The values of high-sensitivity troponin T drawn at admission (4 h after chest pain onset) and 3 h later were 4 ng/L and 3 ng/L, respectively (99th percentile cut-off value < 14 ng/L). Creatinine kinase-MB and myoglobin remained within normal range as well. Due to the pain characteristics and patient's past history troponin-negative acute coronary syndrome (ACS) (unstable angina) was suspected and early invasive evaluation of his coronary anatomy was undertaken. Left coronary arteries were normal, a patent DES (Fig. 1, arrow) in the proximal RCA,

but a hazy-appearing region (Fig. 1, arrowhead) in the mid-RCA was noted. Since this region seemed angiographically inconclusive, an optical coherence tomography (OCT) was performed. This revealed a ruptured plaque with a rupture cavity (Fig. 1, asterisk) at the site of interest (Fig. 1, segments 1–3). The plaque rupture was interpreted as the culprit lesion and was treated with 1 DES. The patient was discharged the following day.

Despite the advent of high-sensitive troponin assays, physicians should still be aware of troponin-negative ACS presentations. As illustrated herein, acute plaque rupture accompanied by acute chest pain does not necessarily result in cardiac necrosis and elevated troponin levels. OCT represents a valuable technology to better understand the underlying pathophysiology and identify the culprit lesion(s) leading to ACS, particularly in patients with inconclusive angiograms.

Conflict of interest: None declared

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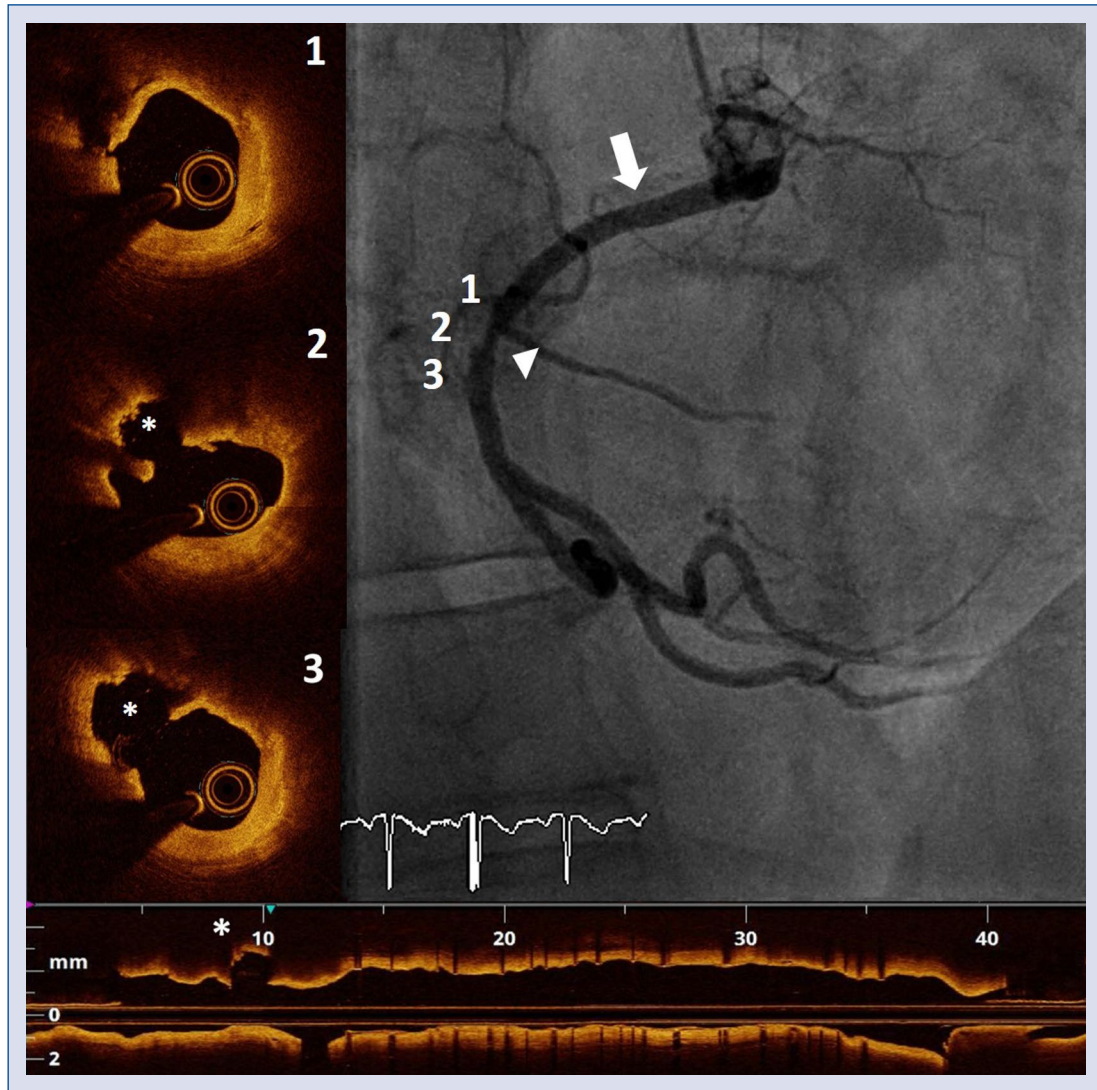


Figure 1. Right coronary artery (RCA) with previously placed drug eluting stent (arrow). Mid-RCA lesion with associated haziness (arrowhead) and corresponding frames from optical coherence tomography (OCT) pullback (1–3) showing plaque rupture and ruptured cavity (*). On OCT minimal luminal area at the culprit site was 3.3 mm² and area stenosis 27%. On quantitative coronary angiography minimal luminal diameter was 1.6 mm and degree of stenosis 44%.