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BRIEF COMMUNICATION

Spontaneous Coronary Artery Dissection: Case Series from a Tertiary Centre

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Spontaneous coronary artery dissection (SCAD) is a rare cause of non-atherosclerotic acute coronary syndrome (ACS). As it is more commonly seen in young women, the diagnosis can be missed. Current evidence is based on case reports and retrospective studies with no consensus recommendations on immediate management and long-term follow-up. We present a case series of four patients to outline clinical presentation, prognosis and long-term management of this rare clinical entity.

Keywords Spontaneous coronary artery dissection • Myocardial infarction • Fibromuscular dysplasia

Case 1

A 45-year-old male was admitted with typical chest pain in the setting of amphetamine use. Past history was significant for type 1 spontaneous coronary artery dissection (SCAD) secondary to coronary vasospasm two years earlier managed medically as well as current smoking, polysubstance abuse and schizophrenia. Presenting electrocardiograph (ECG) showed dynamic inferior T-wave inversion. Cardiac enzymes (troponin-I and creatinine kinase (CK)) levels peaked at 5887ng/L and 244IU/L, respectively. Repeat urgent coronary angiography demonstrated a dominant right coronary artery (RCA) with type 1 spontaneous coronary artery dissection with a long 99% stenosis of proximal RCA collateralised distally from the left system (Figure 1). Intra-coronary imaging was not used. Transthoracic echocardiogram showed severe segmental inferoposterior hypokinesis. He was managed medically with aspirin, clopidogrel and metoprolol. Three months later, he re-presented with ongoing pain and repeat coronary angiogram showed subtotal occlusion of the RCA with unsuccessful attempt at PCI, he was referred for single vessel coronary artery bypass grafting (Figure 1) following confirmation of myocardial viability in the RCA territory.

Case 2

A 52-year-old female presented with sudden onset severe typical chest pain in the setting of recent emotional stress. Her past history was significant for multiple cardiovascular risk factors including hypertension and hypercholesterolaemia. Presenting ECG was normal. Cardiac enzymes including troponin-1 and CK were elevated at 5899ng/L and 238IU/L, respectively. Urgent coronary angiography revealed spontaneous coronary dissection in multiple vessels: left anterior descending (LAD) diagonal-2 (D2) sub-branch and posterior left ventricular artery (PLV) sub-branch of RCA with associated distal clot (Figure 2). She was managed medically with aspirin, clopidogrel, metoprolol and atorvastatin. Transthoracic echocardiogram demonstrated a hypokinetic mid-anterolateral wall and overall mild LV dysfunction. Follow-up investigations for fibromuscular dysplasia (FMD) including renal tract Doppler ultrasound and MRI brain and neck vessels confirmed a diagnosis with significant bilateral renal artery stenosis and an ICA aneurysm secondary to previous ICA dissection. Further aneurysms were seen in the right supraclinoid internal carotid artery, right M2 artery and left carotid-opthalmic artery (Figure 2). She had no further episodes of chest pain and was discharged with cardiology follow-up.

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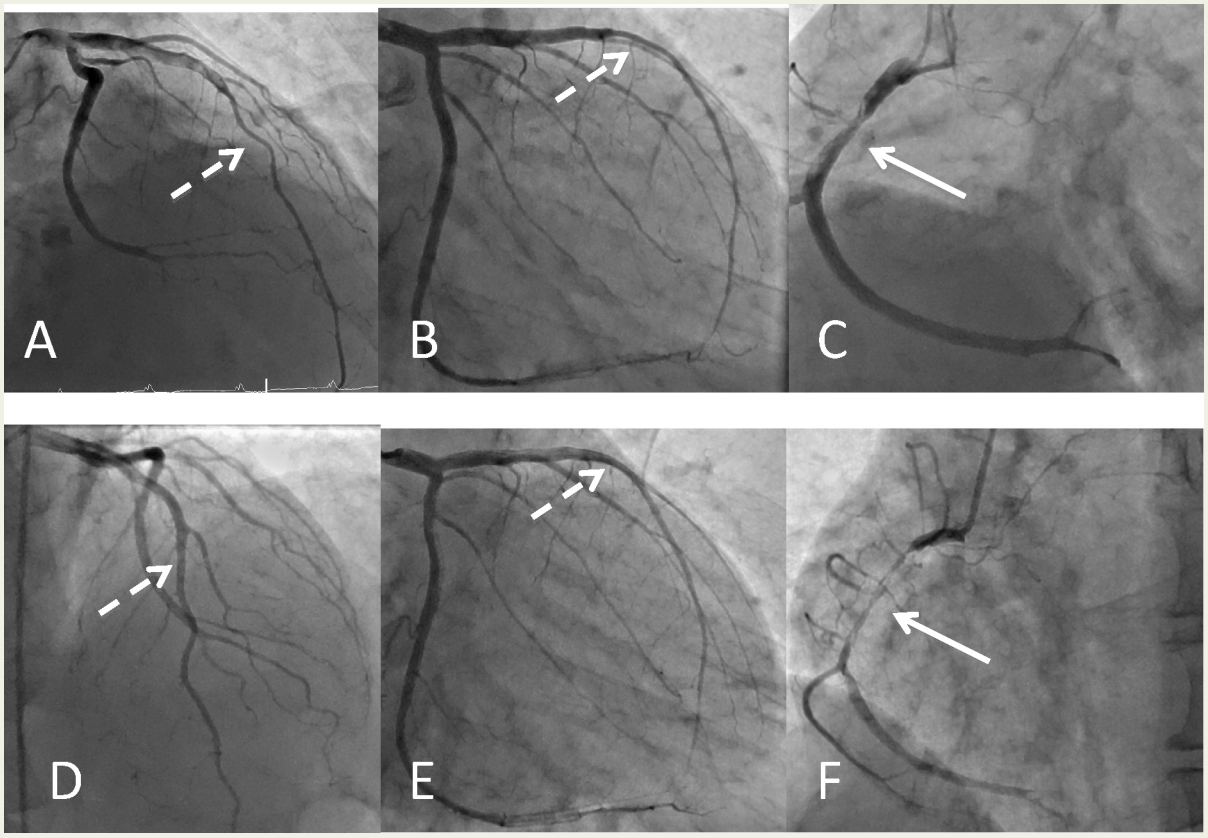

Figure 1 Coronary angiogram at initial presentation (A, B, C) and 3-months later (D, E, F) demonstrating vasospasm of mid-distal LAD (A, B - arrows), which improved on subsequent imaging (D, E - arrows). Long segment of type 1 SCAD (dissection plane) is seen in the proximal dominant RCA (C – solid arrow) with progression on repeat imaging (F – solid arrow).

Case 3

A 55-year-old female presented with acute onset central chest pain in the setting of acute emotional stress. Her past history was significant for hypercholesterolaemia, toxic thyroid goiter causing thyrotoxicosis and anxiety disorder. Her ECG demonstrated T-wave inversion inferiorly and cardiac enzymes (troponin-I and CK) were elevated to 10,652ng/L and 882IU/L, respectively. Urgent coronary angiography revealed 100% left circumflex artery mid vessel stenosis with type 2 spontaneous coronary artery dissection of the first obtuse marginal branch (Figure 3). Transthoracic echocardiogram performed demonstrated moderate segmental systolic dysfunction with severely hypokinetic/akinetic basal to mid inferoseptal and inferior walls. She was managed medically with aspirin, clopidogrel, atorvastatin, bisoprolol and perindopril. Follow-up investigation for FMD was normal.

Case 4

A 55-year-old female, presented with typical, radiating, central chest pain. Her history was only significant for hypertension. No significant ECG features were seen, however, her cardiac enzymes (troponin-I and CK) were elevated at 15,833ng/L and 611IU/L, respectively. Urgent coronary angiography revealed mid-second obtuse marginal (OM2) branch spontaneous coronary dissection (Figure 4). Transthoracic echocardiogram showed normal ventricular function. She was managed medically on aspirin, clopidogrel and atorvastatin and investigation did not reveal underlying FMD.

Overview

Spontaneous coronary artery dissection is the separation between the layers of the coronary artery with resultant false lumen formation or intramural haematoma, compromising antegrade flow [1]. It is a rare cause of non-atherosclerotic ACS with a prevalence of about 1% [2], but seen more commonly in young females [2]. The clinical presentation and complications are similar to ACS [1]. Identification is increasing and the pathophysiology is evolving with the use of intracoronary imaging modalities. Precipitating factors include FMD, pregnancy, connective tissue disorders, systemic inflammatory diseases, hormonal therapy and coronary artery spasm [2–4]. Recent evidence has shown FMD and other extra-coronary vascular abnormalities are closely associated with SCAD [2,4,5].