CASE REPORT

Spontaneous triple coronary artery dissection in a 78-year-old woman resolved angiographically with anticoagulation and medical management

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SUMMARY

A 78-year-old woman who presented with chest pain, on a background of hypertension and varicose veins, was found to have a non-ST segment elevation myocardial infarction with coronary angiography demonstrating dissections of all three major arteries distally. She was treated medically, with anticoagulation and risk factor management as the primary therapies. This is the first reported case of triple spontaneous coronary artery dissection treated medically, along with angiographic follow-up demonstrating complete resolution.

BACKGROUND

Spontaneous coronary artery dissection (SCAD) is an uncommon cause of acute myocardial infarction. One extremely rare phenomenon is triple SCAD, that is, the occurrence of SCAD in three major coronary arteries. There are only six articles in the literature documenting these cases.^{1–6} Our case is exceptional, given that the patient was 78 years old and therefore the oldest reported patient with SCAD, which is generally a condition of younger adults. Furthermore, this is the first published case to demonstrate a successful conservative management strategy for triple SCAD, with follow-up angiographic images demonstrating complete resolution of the dissections.

CASE PRESENTATION

A 78-year-old woman with a history of hypertension presented to the accident and emergency department, with left-sided, heavy, severe chest pain, while walking. There was some radiation to her left arm and jaw, and nausea. The pain lasted for half an hour at a severe level, and then gradually decreased in intensity over the course of 2.5 h. She had not experienced anything similar in the past.

Her medical history consisted of hypertension, varicose veins and cholecystectomy. Her only regular medication was perindopril 4 mg daily which was started 15 days prior to presentation. She had previously been taking amlodipine but this was discontinued due to pedal swelling. The pedal oedema was being treated with compression stockings which had been worn for the first time 2 days earlier. She reported aspirin 'allergy'.

On examination, she was without fever, with a heart rate of 56 bpm, blood pressure of 155/74, respiratory rate of 16 breaths/min and oxygen saturation of 97% on room air. She was fully

conscious and conversant. Her heart sounds were normal and there were no signs of heart failure. No abnormalities were found on examination of her lungs or abdomen. She was wearing compression stockings on both legs.

INVESTIGATIONS

The patient's ECG showed normal sinus rhythm, without any evidence of acute ischaemia or prior infarction. Initial blood tests showed a troponin I level of 0.03 ng/mL which rose to 4.80 ng/mL approximately 12 h later (normal level is <1.0 ng/mL). Full blood count, C reactive protein, urea and electrolytes, and liver function were all within normal ranges.

TREATMENT

The patient was treated for acute coronary syndrome with 300 mg of clopidogrel loading, enoxaparin subcutaneously and glyceryl trinitrate spray. The following day, a further episode of chest pain led to the addition of aspirin, a proton pump inhibitor and bisoprolol as the prior aspirin 'allergy' was found to be a history of dyspepsia and not true allergy.

Coronary angiography 6 days after admission (videos 1–3) revealed a right-dominant coronary circulation with some diffuse distal disease, a normal left main stem and left-sided circulation other than spontaneous dissection in the following vessels:

Video 1 Inpatient angiogram. Persistent dye staining and dissection in large obtuse marginal inferior branch.

To cite: Backman WD, Bakhai A. *BMJ Case Rep* Published online: [please include Day Month Year] doi:10.1136/bcr-2013-008751

Video 2 Inpatient angiogram. Persistent dye staining and dissection in distal left anterior descending artery.

- ▶ Distal left anterior descending artery;
- ▶ The first obtuse marginal branch of the left circumflex artery;
- ▶ The posterior descending artery of the right coronary artery.

The dissecting lesions were considered too distal for successful stenting, and therefore a conservative approach was adopted, using anticoagulation with enoxaparin as the primary treatment.

OUTCOME AND FOLLOW-UP

The patient had no further pain after day 2 and transthoracic echo on day 8 showed normal left ventricular systolic function with an ejection fraction of 55% and no valve disease of significance. There was hypokinesia of the basal and middle sections of the posterior and inferior wall.

A full rheumatology and vasculitic screen, including: anticardiolipin and antineutrophil cytoplasmic antibodies, C3 and C4 complement levels, rheumatoid factor and general immunoglobulin

Video 3 Inpatient angiogram. Persistent dye staining and dissection in distal posterior descending artery.

Video 4 Follow up angiogram showing complete resolution of the dissection in the large obtuse marginal branch (compared to video 1).

levels found no abnormal results and a syphilis antibody test was also negative.

The patient was discharged home after 14 days and referred for outpatient cardiology follow-up and anticoagulation. Her angiogram, 2 months after discharge, showed complete resolution of the coronary arterial dissections (videos 4–6).

Video 5 Follow up angiogram showing complete resolution of the dissection in the distal left anterior descending artery (compared to video 2).

Video 6 Follow up angiogram showing complete resolution of the dissection in the distal posterior descending artery (compared to video 3).

DISCUSSION

The mechanisms of SCAD are poorly understood. The vast majority of SCADs occur in women in the peripartum period, and usually affect a single coronary artery.⁷ Other risk factors include Ehlers-Danlos and Marfan syndromes. Coronary atherosclerosis and its associated risk factors appear to play a role in a minority of cases of SCAD.⁸ Interestingly, of the handful of reported cases of triple SCAD,^{1–6} only one appeared to be associated with peripartum physiology.¹ It is also unclear how the acute event of triple SCAD is triggered. In the only reported postmortem pathological study of triple SCAD, a common dissection origin was neither identified nor considered likely.⁵ Furthermore, all of the cases occurred in young to middle-aged patients, in whom consistent risk factors were not apparent and in whom the likelihood of significant coronary atherosclerosis was generally very low.

As aforementioned, the case presented here is exceptional among the rare reports of triple SCAD, in that the patient was 78 years old at the time of presentation. It is unclear how or why three coronary arteries became dissected. Angiographically at least, it appears there was no common dissection origin and the patient was simply walking at the time of the onset of her symptoms. Given the fact the patient had a second sudden episode of chest pain 1 day after admission, we cannot exclude the possibility that the three dissections first visualised upon angiography 6 days postadmission could have taken place serially at separate times within the 24 h period following the presenting episode.

At the time of presentation, the patient had been wearing compression stockings on both legs constantly for about 2 days, which raises the question of whether this may have caused haemodynamic disturbance, for example increased afterload,

contributing to the triple SCAD in some way, on the background of hypertension.

In terms of management, this is the first report of a case of triple SCAD treated medically. The follow-up angiogram 2.5 months after the initial presentation demonstrated complete resolution of the dissections. Therefore, medical management for triple SCAD is feasible in certain patients, and 2.5–3 months may be an appropriate time for follow-up angiography.

Learning points

- ▶ Spontaneous coronary artery dissection (SCAD), and specifically triple SCAD, is an exceedingly rare cause of acute myocardial infarction or acute coronary syndrome, but can occur in patients of any age.
- ▶ Whether there is a contribution from the use of compression stockings is worth considering.
- ▶ Medical management with anticoagulation and risk factor management is a feasible strategy for triple SCAD, and can facilitate complete resolution of the arterial dissections.
- ▶ Two to 3 months may be the appropriate timing for reangiography.

Acknowledgements The authors would like to thank the staff at Barnet Hospital Cardiac Catheter Lab and at Royal Free Hospital Cardiac Catheter Lab for their support in the case study.

Contributors AB cared for the patient and suggested writing a case report. WDB performed the literature search and wrote the initial draft of the article. AB and WDB made several crucial revisions of the article and reviewed the final draft prior to approving it for submission.

Competing interests None.

Patient consent Obtained.

Provenance and peer review Not commissioned; externally peer reviewed.

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