SPONTANEOUS CORONARY ARTERY DISSECTION

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Introduction

- SCAD is spontaneous separation of coronary artery wall unrelated to iatrogenic, traumatic, and/or atherosclerotic disease.
- Usually presents as acute coronary syndromes, MI, or even sudden death in young females.

Background

- 39 year old female with PMH of anxiety, migraine, PCOS and idiopathic ventricular fibrillation status post ablation and implantable cardioverter defibrillator 3 years ago admitted for substernal chest pain radiating to jaw.
- EKG showed ST segment depressions and TWI in inferior and lateral leads and Troponins peaked at 3.5.
- Echocardiogram showed normal EF 60-65% without any wall motion abnormalities.
- Work up for risk factors showed LDL 117, A1c 5.1, negative rapid drug screen and normal TSH.
- Coronary angiogram showed tortuous non-obstructed vessels with SCAD in proximal and mid portion of diagonal vessel.
- Further work up showed normal inflammatory markers, autoimmune panel was normal. CT angiogram of head, neck, chest, abdomen and pelvis didn't show any evidence fibromuscular dysplasia.
- Patient was started on metoprolol and dual antiplatelet therapy for one year and counselled about risk of recurrent SCAD with pregnancy and hormonal treatment.

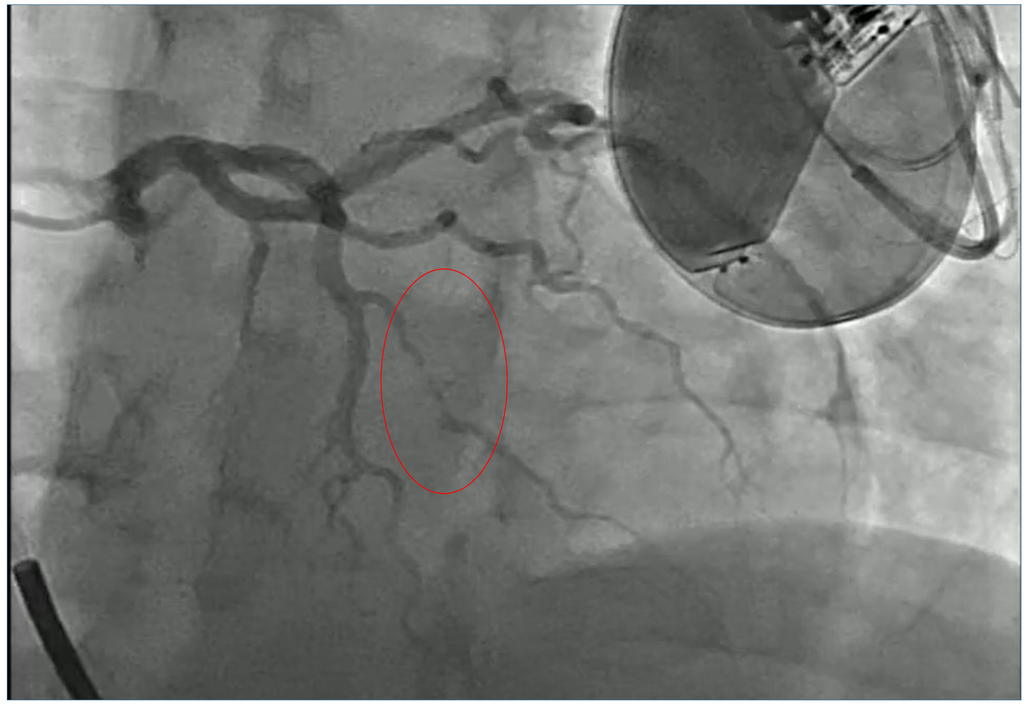

Figure 1: Angiographic image showing SCAD of mid-diagonal vessel

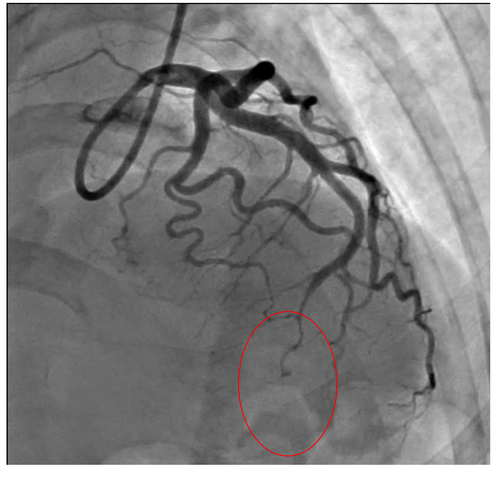

Figure 3: Example Image of dissection of mLAD

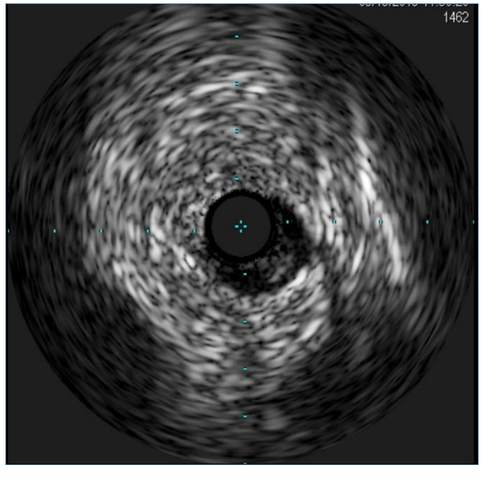

Figure 2: Example IVUS Image of dissection of mLAD

Discussion

- SCAD is underdiagnosed as young females presenting with chest pain without atherosclerotic risk factors don't necessarily get coronary angiogram as part of ischemic evaluation.
- Pathogenesis involves coronary artery obstruction causes by intramural hematoma rather than atherosclerotic plaque rupture.
- Risk factors include systemic arteropathies(FMD), pregnancy, connective tissue diseases, systemic inflammatory diseases, migraine and hormonal therapy. Familial and idiopathic SCAD have also been reported.
- Precipitating factors include intense physical or emotional stress and recreational drugs. Our patient reported multiple stress factors due to recent miscarriage, suicide attempt of husband, had a history of complicated migraine.
- Coronary angiogram is gold standard for diagnosis. Hemodynamically stable patients with no high risk anatomy are treated conservatively with inpatient monitoring, discontinuation of heparin and DAPT for a year with beta blockers.
- There is no established role of statins for secondary prevention.
- Hemodynamically unstable patients with left main involvement are treated with coronary artery bypass graft versus percutaneous coronary intervention(PCI).
- PCI for SCAD is associated with higher complications, lower technical success and is not usually recommended except in selected patients.

Conclusions

SCAD should be considered in the differentials of young patients presenting with chest pain with minimal atherosclerotic risk factors for early diagnosis to reduce mortality.

References, funding, acknowledgements

1. Hayes SN, Kim ESH, Saw J, Adlam D, Arslanian-Engoren C, Economy KE, Ganesh SK, Gulati R, Lindsay ME, Mieres JH, Naderi S, Shah S, Thaler DE, Tweet MS, Wood MJ; American Heart Association Council on Peripheral Vascular Disease; Council on Clinical Cardiology; Council on Cardiovascular and Stroke Nursing; Council on Genomic and Precision Medicine; and Stroke Council. Spontaneous Coronary Artery Dissection: Current State of the Science: A Scientific Statement From the American Heart Association. Circulation. 2018 May 8;137(19):e523-e557. doi: 10.1161/CIR.0000000000000564. Epub 2018 Feb 22. PMID: 29472380; PMCID: PMC5957087.
2. Additional support and images supplied by Allan Rassa MD and Patrick Goleski MD