Multi-Vessel SCAD in a Young Lady with SLE

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Introduction

Spontaneous coronary artery dissection (SCAD) has emerged as an important cause of acute coronary syndrome, myocardial infarction, and sudden death, particularly among young women and individuals with few conventional atherosclerotic risk factors. Today we present a case of a young non-pregnant woman with systemic lupus erythematosus who was found to have multi-vessel SCAD in the setting of hypertensive emergency.

Admission & Initial Workup

A 20-year-old African American female with a history of systemic lupus erythematosus (SLE), hypertension and Raynaud's phenomenon presented to the emergency room complaining of chest and epigastric pain, nausea and vomiting that started two days prior. She described the pain as sharp and reported that the pain started when she was "just sitting around". She denies any radiation, provoking or palliating factors. She denies any pain associated with physical or emotional exertion, orthopnea, or paxoysmal nocturnal dyspnea. She states the pain feels similar to episodes of pancreatitis that she has experienced in the past and endorses a recent sore throat and cold symptoms.

On arrival her blood pressure was found to be 202/137. Chest pain appeared to be reproducible with palpation of the sternum, physical exam findings were otherwise normal. Labs were remarkable for a troponin of 1.63 ng/mL, a white blood cell count of 17.1, a potassium of 3.4, a pro-brain natriuretic peptide of 1331 pg/mL and an erythrocyte sedimentation rate of 29. A chest x-ray and CT-angiogram of the chest and abdomen revealed cardiomegaly. An electrocardiogram on arrival showed poor R-wave progression, and a repeat six hours later showed T-wave inversions in the lateral leads.

A transthoracic echo revealed moderate left ventricular hypokinesis, grade 2 diastolic dysfunction, moderate concentric left ventricular hypertrophy and an LVEF of 36%. A coronary angiogram was performed the next day and she was found to have a 3cm spontaneous coronary artery dissection (SCAD) of the distal first diagonal branch and a 4cm SCAD of the mid-portion of the second diagonal branch. She also had severe hypokinesis of the lateral wall.

Diagnostic Studies, Imaging & Case Outcome

Figure 1: Electrocardiogram demonstrating inverted T-waves in the lateral leads and poor R-wave progression V1-V3.

Figure 2: Coronary angiogram, right anterior oblique view, demonstrating a 3cm distal lesion in the first diagonal that is consistent with SCAD. The second diagonal has a mid portion, long 3-4 cm lesion consistent with SCAD.

Figure 3: AP cranial view similarly showing dissection in the diagonal branches

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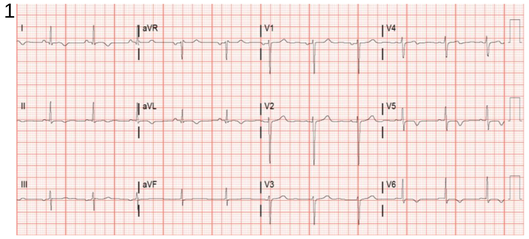

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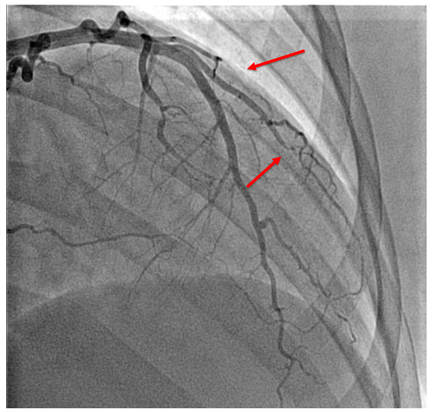

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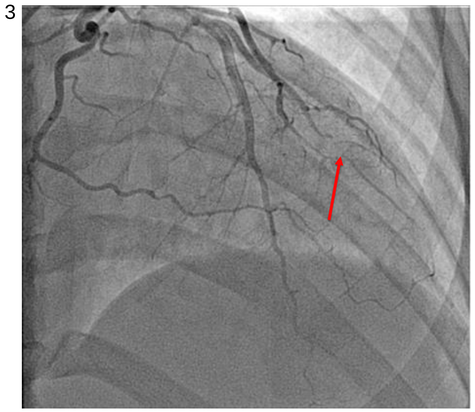

Hospital course: The patient was admitted to the cardiology service and started on a nitroglycerine drip. Her symptoms rapidly improved with blood pressure control and once stable she underwent cardiac catheterization. No interventions were performed. She continued to improve and was discharged home on goal-directed management and dual antiplatelet therapy with plans for close follow-up.

Discussion

Spontaneous coronary artery dissection (SCAD) in the setting of lupus is a rare and likely under-reported phenomenon. Most cases of SCAD occur primarily in women, specifically during pregnancy and the early puerperium stage and is generally attributed to hormonal changes affecting myocyte proliferation, increased cardiac output and blood volume leading to intimal rupture. The left coronary artery is involved with 66% of cases in women, and the right coronary artery is involved in the majority of cases with men. The average age involved with multi-vessel disease is around 56 years. It is diagnostically challenging to differentiate SCAD from acute myocardial infarction and the majority of cases are diagnosed post-mortem.

Discussion, continued

- 1/3 of cases in women occur in pregnant and post-partum women presenting with chest pain
- SCAD may be the cause of ACS in up to 35% of MIs in women ≤50 years of age
- Most cases of SCAD occur in patients without risk factors
- SCAD has been associated with exercise, cocaine abuse, connective tissue disease such as Marfans and Ehler-Danlos Syndromes, polyarteritis nodosa and systemic lupus erythematosus
- It is important to rule out aortic dissection prior to anticoagulation to prevent expansion of the lumen, however in cases of spontaneous coronary dissection anticoagulation is favored to retain the patency of the true lumen

Conclusion

Our patients' case was unusual in both her relatively young age (20) and her multi-vessel involvement. A diagnosis of SCAD should be included in the differential diagnosis for all young women presenting with chest pain, regardless of pregnancy status.

References

C Arrigo, C Bochicchio, S Pezzotti, M Amato, M Carminati, G Crocco, et al.
Spontaneous coronary artery dissection in a young woman without risk factors
J Emerg Med, 44 (2) (2013), pp. e165-e168
https://www.sciencedirect.com/science/article/abs/pii/S0736467912008591?via%3Dihub

Hayes, S. N., Kim, E. S., Saw, J., Adlam, D., Arslanian-Engoren, C., Economy, K. E., ... & Naderi, S. (2018). Spontaneous coronary artery dissection: current state of the science: a scientific statement from the American Heart Association.
Circulation, *137*(19), e523-e557.
https://www.ahajournals.org/doi/full/10.1161/cir.0000000000000564

K. Ghaffarian, M. Furin, R. Bassett
STEMI in a young female? Consider spontaneous peripartum coronary artery dissection
Am J Emerg Med, 35 (2017), pp. 381.e1-381.e4
https://www-sciencedirect-com.echo.louisville.edu/science/article/pii/S073567571630571X

T Nakashima, TN Noguchi, MF Fujino, TA Adachi, JK Kotani, HS Sakamoto, et al.
Clinical characteristics and prognosis of spontaneous coronary artery dissection in young females; results from a 20-year database of acute coronary syndrome
Eur Heart J, 34 (1) (2013)