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CASE REPORT

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Unstable Coronary Angina with EKG changes due to LAD Coronary Artery Dissection

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ABSTRACT

Myocardial infarction (MI) is necrosis of heart muscle secondary to prolonged ischemia. There are an estimated 1.5 million cases of MI that occurs annually in the United States. Clinical symptoms include substernal chest pain radiating to the left shoulder, neck, or jaw, palpitations, and diaphoresis. Patients are often tachycardic and may be tachypneic. Work up routinely include electrocardiography (ECG) and troponin levels. Treatment will depend on the cause of the MI. There are five types of MIs with type 1 being the most common. Within type one, the most common cause is atherosclerotic. Other causes including coronary artery dissection, vasospasm, embolic, and inflammatory (vasculitides, COVID). In young female patients who present with clinical symptoms of MI, coronary artery dissection is an important differential. We demonstrate a case of a young woman presenting with unstable coronary angina. The patient was diagnosed with SCAD on a diagnostic catheterization and was promptly treated a stent.

ARTICLE HISTORY

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Introduction

Myocardial infarction is a potentially devastating condition with high morbidity and mortality. There are five types of MI with the most common being Type 1 (spontaneous MI). Causes include atherosclerotic, fissure, thrombosis, inflammatory, and dissection. Type 2 MI is termed "demand ischemia" or MI as a consequence of increased oxygen demand or decreased supply. Type 3 is an MI leading to death before biomarkers could be obtained. Type 4 is MI related to PCI (4a) and Stent thrombosis (4b). Type 5 is MI related to coronary artery bypass grafting (CABG). Here we present a case with spontaneous coronary artery dissection (SCAD) as a rare cause of Type 1 MI.

Case Description

The patient is a 44-year-old African American female with a past medical history of HTN who presented to the emergency room with a primary complaint of chest pain. The patient stated that her chest pain is a 9/10, left sided, sudden pressure-like pain radiating to the left upper extremity. The pain is associated with palpitations and nausea. She endorsed that she has not been taking her blood pressure medications for three weeks prior to admission. The patient denied any cardiac history and previous stress tests. On social history, the patient endorsed that she was a smoker in the past but quit 4 years prior to admission, and denied alcohol or drug use. Physical exam revealed an overweight female in moderate distress. Pertinent negatives included moist mucous membranes, clear lungs, regular rate and rhythm, no murmurs, gallops, and no peripheral edema. Vitals were stable with temperature 97.6, pulse 74, BP 110/66, respiratory rate 15. Labs included WBC 7.4, Hg 12.2, Sodium 141, Potassium 4.5, Cr 0.84, Trop <0.012 x4, LDL 178, and urine toxicology negative for cocaine. First EKG showed NSR with no ST-T changes. Repeat EKG showed T-wave inversions (TWI) in leads V4-V6. The patient was put through a pharmacologic stress test which showed recurrent TWI during Lexiscan infusion with nuclear images positive for anterior ischemia. The patient was treated medically with Aspirin, Plavix, Metoprolol, HCTZ, Lisinopril, and rosuvastatin. The patient was transferred to a PCI/CABG capable facility for catheterization. LAD coronary artery dissection with subtotal occlusion was identified and successfully stented.

Discussion

This patient presented with unstable coronary angina (chest pain with reversible STT changes and negative troponins). The most common type of myocardial infarct is type 1 MI. Although Type 1 MI's are most commonly caused by atherosclerotic plaques, other causes should be recognized, with special awareness in females under the age of 50 presenting with a MI. SCAD is a rare but increasingly recognized cause of MI. By definition, SCAD is a spontaneous tear of the coronary arterial wall not due to traumatic

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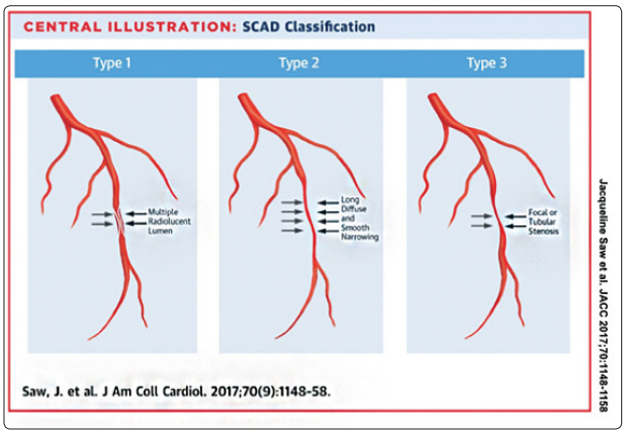
or iatrogenic causes. In other words, non-atherosclerotic coronary artery obstruction. Latest studies show that 1.7% to 4% of acute coronary syndromes (ACS) have SCAD as the underlying cause [1, 2]. The prevalence is most prominent in young women <60 years of age with SCAD accounting for 22% to 35% of ACS in this population [1, 3, 4]. Although uncommon, recognition is increasing, with approximately one-half of the last 1,500 published SCAD cases reported within the last decade. SCAD is diagnosed via angiography and is classified into three types. Type 1 is when contrast dye staining show the arterial wall with multiple radiolucent lumen. Type 2 shows diffuse, long, and smooth stenosis (maybe mild stenosis to complete occlusion). Type 3 findings include focal or tubular stenosis. As type 3 can mimic atherosclerosis, further diagnostic imaging is required such as optical coherence tomography (OCT) or intravascular ultrasound (IVUS) to obtain the cause.



Type 1 infarcts, regardless of mechanism, may benefit from mechanical or pharmacologic revascularization. Despite all our advances in the subject, SCAD remains insufficiently understood. There are limited prospective series and consensus on treatment has yet to be established.

Conclusion

Myocardial Infarction is a significant disease with high morbidity and mortality. A potential pitfall in patients presenting with an MI is to jump to the conclusion of atherosclerotic as being the cause, particularly in young women. Though uncommon, SCAD is an important cause of MI and with this case report, we hope to increase awareness and recognition of this potentially devastating condition [5].

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