CASE REPORT

ANOMALOUS ORIGIN OF THE EPICARDIAL LEFT CORONARY ARTERY FROM THE RIGHT CORONARY SINUS REVEALED IN A PATIENT PRESENTING WITH ACUTE MYOCARDIAL INFARCTION

Habib Rehman Khan, Hashim Hashim, Manoj Bhandari*

Nottingham NHS Trust, Nottingham, *Royal Derby NHS Trust, Derby-United Kingdom

An 84-year-old lady presented with history of syncope and a transient loss of consciousness proceeded by severe chest pain to accident and emergency. Electrocardiogram (ECG) revealed anterolateral ST elevation. She had an emergency coronary angiogram revealing an anomalous left coronary artery with severe tortuosity and occlusion at mid segment. During the course of the angiogram she became asymptomatic and TIMI flow spontaneously restored. These findings were discussed with the patient and she opted for medical management understanding that it would be difficult to negotiate the tortuosity. On follow up she remained well with optimal anti-anginal treatment

Keywords: Myocardial infarction, anomalous, angiography, coronary artery

J Ayub Med Coll Abbottabad 2016;28(2):420–2

INTRODUCTION

Coronary artery anomalies are a group of congenital disorders characterized by an abnormal anatomy of the coronary arteries with highly variable clinical presentation. It is reported in 1% of adults in a large retrospective study[1] and 5.6% of patients in a large series of patients undergoing angiography[2].

Although coronary artery anomalies are usually benign, it is a major cause of sudden cardiac death in young athletes.[3] There are many subtypes of coronary anomalies and several classifications are proposed depending on the site of origin of the coronary arteries, course of the arteries and connection between coronary arteries.[4,5] Anomalous origination of a coronary artery from the opposite sinus is a sub group of coronary artery anomalies that linked to higher mortality rates in young adults.[6] The clinical presentation of this sub group is variable and this might be due to multiple mechanisms contributing to the myocardial ischaemia.[7]

CASE REPORT

An 84-year-old lady presented in August 2011 with syncope while at home and loss of consciousness for 10 seconds after an altercation at her residence. On arousal she complained of central chest pain. She was taken to accident and emergency by the ambulances services. On arrival it was noted that she was hemodynamically stable with ECG showing anterolateral ST elevation (Figure-1)

She had a history of esophagitis, depression, obstructive airways disease, arthritis and peripheral neuropathy. She was independent in activities of daily living. There was no history of symptoms to suggest angina. Her symptoms of hypoglycaemic episodes were different to this presentation.

In the cardiac catheter lab, right femoral artery access was achieved using a 6Fr sheath. Attempted catheterisation of the left coronary artery did not reveal any artery arising from the left coronary sinus (Figure-3). Aortogram showed common origin of the left and right coronary arteries (Figure-4). Catheterisation of the right coronary sinus revealed a common origin of the right and left coronary arteries (Figure-5). After the first injection of her left coronary artery her ST segments become more isoelectric and her symptoms improved (Figure-2).

Coronary anatomy showed moderate disease in Left Main stem, Ostial LAD and circumflex disease. There was severe disease in proximal Obtuse marginal that was likely culprit of her presentation. In the event of symptoms resolving, ECG improving and the challenging anatomy, it was considered for her not to have a percutaneous intervention. She remained well during her stay and has been reviewed 6 months after her presentation. She denies any angina equivalent symptoms.

Figure-1: Electrocardiogram before coronary angiogram

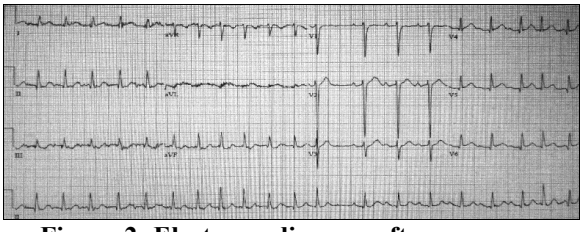

Figure-2: Electrocardiogram after coronary angiogram

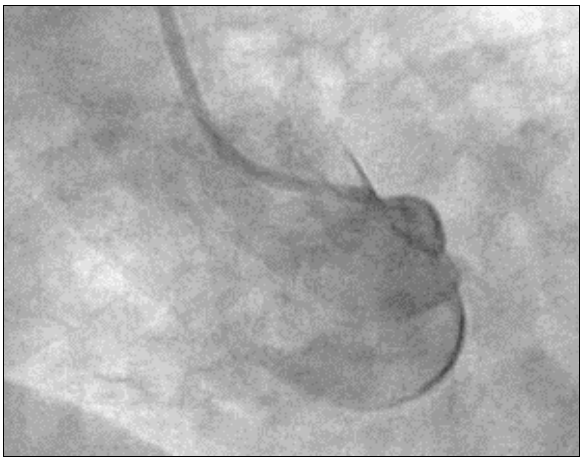

Figure-3: Coronary Angiogram: Left Anterior Oblique (LAO) 30° - Left coronary artery not seen to arise from the left coronary sinus.

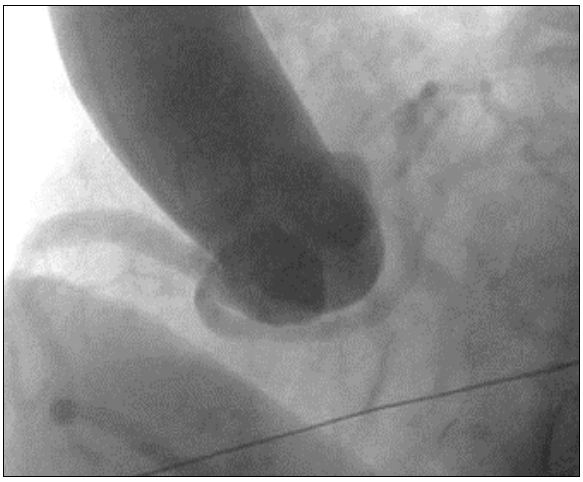

Figure-4: Aortogram: LAO 30° aortogram revealing the origin of the left coronary and right coronary arteries

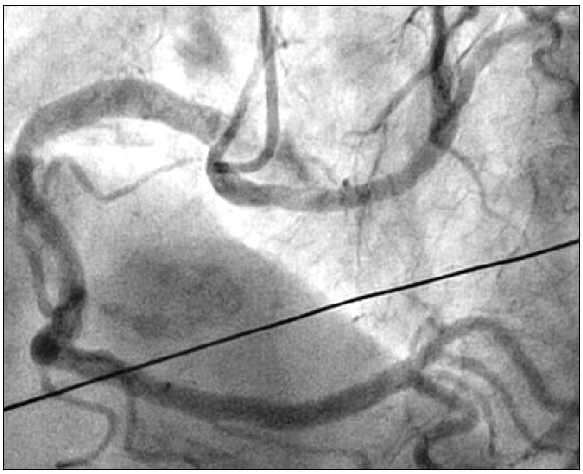

Figure-5: LAO 30°. Cathetrisation of the right coronary sinus showing the origin of the right coronary artery and anomalous left coronary artery

Figure-6: LAO caudal 38, 40 degrees

Figure-7: LAO 30 projection. Selective Left Coronary Artery cannulation

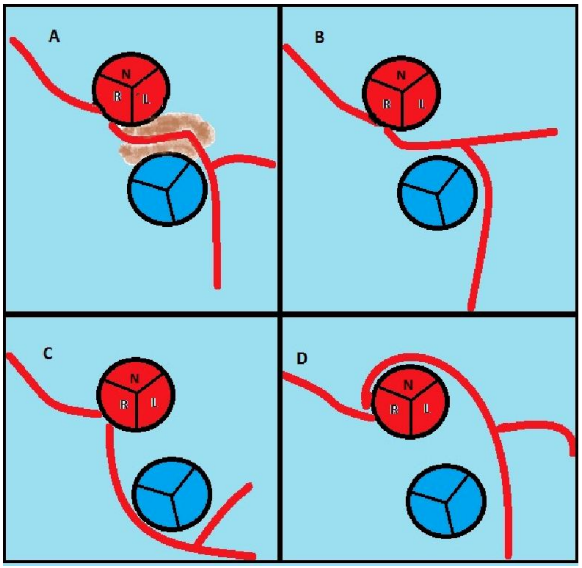

Figure-8: Schematic diagram of four subtypes of anomalous origin of the left coronary artery from right coronary sinus. A–Intraseptal – supracristal course. B-Preaortic course or in between Aorta and Pulmonary artery. C-Prepulmonary course. D– Retroaortic course

DISCUSSION

We describe a case of anomalous left coronary artery presenting as acute myocardial infarction. This case was diagnosed early and settled spontaneously, not requiring percutaneous intervention and did not suffer significant myocardial damage as her left ventricular systolic function remained normal after 6 months review.

Congenital coronary anomalies are associated with many cardiac presentations including myocardial infarction, ventricular arrhythmias, sudden death, exercise induced syncope. Failure to diagnose a coronary anomaly can lead to significant cardiac complications and inadequate treatment especially during acute events such as myocardial infarction.

Wilkins *et al* described four subtypes of anomalous origin of the left coronary artery from right coronary sinus.5 He reviewed 10661 patients from 1974 to 1986 and discovered coronary anomaly in 0.78% (83 patients). Left coronary anomaly rising from right coronary sinus was rare.5

Two angiographic clues can lead to suspicion of anomalous origin. Firstly, an absent area of myocardial perfusion and secondly an "aortic root" sign where there is an image of an artery looping behind the aorta during ventriculogram or aortogram.

There are various classifications used to describe coronary anomalies. We have described the variations of the left coronary artery in a schematic diagram below.

We describe a case of anomalous left coronary artery presenting as acute myocardial infarction. This case was diagnosed early and settled spontaneously, not requiring Percutaneous intervention and did not suffer significant myocardial damage as her left ventricular systolic function remained normal after 6 months review.

REFERENCES

1. Tuo G, Marasini M, Brunelli C, Zannini L, Balbi M. Incidence and clinical relevance of primary congenital anomalies of the coronary arteries in children and adults. Cardiol Young 2013;23(3):381–6.
2. Angelini P, Fairchild VD, eds. Coronary Artery Anomalies: A Comprehensive Approach. Philadelphia, PA: Lippincott Williams & Wilkins; 1999.
3. Maron BJ. Sudden death in young athletes. N Engl J Med 2003;349(11):1064–75.
4. Angelini P, Velasco JA, Flamm S. Coronary anomalies: incidence, pathophysiology, and clinical relevance. Circulation 2002;105(20):2449–54.
5. Wilkins CE, Betancourt B, Mathur VS, Massumi A, De Castro CM, Garcia E, *et al*. Coronary artery anomalies: a review of more than 10 000 patients from the Clayton Cardiovascular Laboratories. Tex Heart Inst J 1998;15(3):166–73.
6. Eckart RE, Scoville SL, Campbell CL, Shry EA, Stajduhar KC, Potter RN, *et al*. Sudden death in young adults: a 25-year review of autopsies in military recruits. Ann Intern Med. 2004;141:829–34.
7. Angelini P. Coronary artery anomalies: an entity in search of an identity. Circulation 2007;115(10):1296–305.

Address for Correspondence:

Habib Rehman Khan, Nottingham NHS Trust, Nottingham-United Kingdom

Email: hurkhan@msn.com