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Original Research Paper

Cardiology

INCIDENTALLY DETECTED MALIGNANT RIGHT CORONARY ARTERY ORIGINATING FROM LEFT CORONARY SINUS: A RARE CASE REPORT

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ABSTRACT

BACKGROUND: Congenital coronary artery anomalies are rare and are usually an incidental finding. The incidence of coronary anomalies was reported as 1.3% in a large number of patients undergoing coronary angiogram1. In this report we present a patient with a malignant right coronary artery (RCA) originating from left coronary sinus

CASE REPORT: A 52 year old male came to cardiac OPD in view of fitness for cataract surgery. He does not have any significant cardiac history or symptoms. Coronary angiogram revealed Anomalous coronary artery arising from left coronary sinus with critical 99% lesion in the Mid RCA. The patient was taken up for Percutaneous transluminal coronary angioplasty and the Mid RCA lesion was addressed.

CONCLUSION: The treatment plan for people with Malignant RCA should be based on an interdisciplinary decision made between the treating physician, patient, cardiovascular imaging experts, cardiologists and heart surgeons depending on symptoms, age, anatomic features of ACAOS and ischaemic testing.

KEYWORDS : Malignant RCA, Coronary artery anomalies, Coronary angiography

INTRODUCTION :

Anomalous origin of the coronary artery from the opposite sinus (ACAOS) is a rare congenital disease that is characterized by an anomalous course and/or termination of a native coronary vessel[2,3]. The prevalence rate for the RCA branching from the left coronary sinus was reported as 0.43% in patients undergoing computed tomography coronary angiography[4].

ACAOS are traditionally classified as malignant and benign variants. Malignant ACAOS has an interarterial course (IAC) of the anomalous vessels between pulmonary artery and aorta. Malignant RCA was found to be potential underlying cause for sudden cardiac death[5]. Such people may be at risk for myocardial ischaemia and consecutive arrhythmia, even in the absence of atherosclerotic lesions, as the anomalous vessel is prone to dynamic compression during physical exercise. This has led to difficulty in deciding on whether a 'watchful waiting' approach or more proactive approach should be adopted.

Case Report:

A 52 year old male came to cardiac OPD in view of fitness for cataract surgery. He does not have any significant cardiac history or symptoms. He is not a known case of hypertension or diabetes.

On examination, General condition and vitals of the patient were stable.

ECG showed "q waves in III, aVF with symmetric T wave inversions in II, III, aVF, V5, V6.

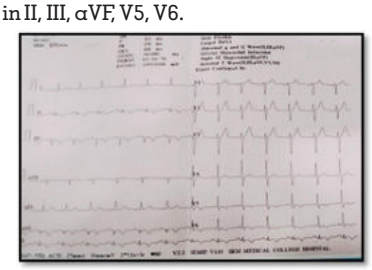

Figure 1: Ecg Of The Patient

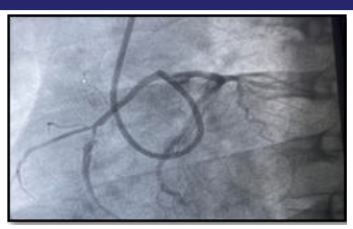

Figure 2: Malignant RCA originating from left coronary sinus.

Computed tomography coronary angiography (CTCA) was done to know the course of the RCA. It showed Anomalous origin of Right coronary from left coronary sinus/left coronary mainstem with compression of the proximal right coronary artery between aorta and pulmonary artery – suggestive of Malignant RCA. There was short segment complete stenosis of right coronary artery just beyond the origin of right acute marginal artery.

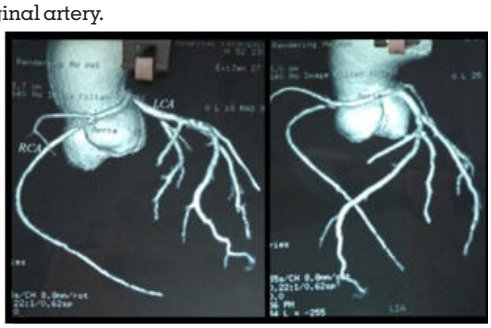

Figure 3: CT Coronary angiogram

The patient was taken up for Percutaneous transluminal coronary angioplasty (PTCA).

Guide catheter	6F EBU 4
Guide wire	BMW
Predilatation	2.5 x 12 mm NC Trek
Stent	2.75 x 32 mm Promus premier
Post dilatation	3 x 12 mm NC Trek 3.25 x 12 mm NC Trek

TIMI III flow achieved.

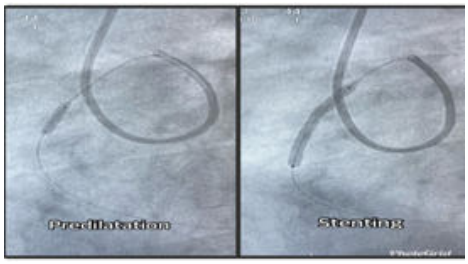

Figure 4: PTCA procedure

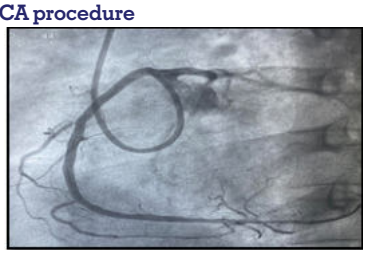

Figure 5 : Post PTCA

Post procedure, the patient was stable and was monitored in the ICU.

DISCUSSION:

Malignant RCAs are rare, with an incidence of 0.17 to 1.2%[6]. Various factors contributing to sudden cardiac death and myocardial infarctions include mechanical compression between the aorta and pulmonary artery, the presence of valve like ridges, angulation of the artery as it courses and presence of a slit-like orifice.[7]

CTCA is the primary imaging technique to evaluate high risk anatomic features in patients with either a suspected or incidental finding of ACAOS followed by non invasive ischaemic testing.

For non-invasive testing for ischaemia, physical exercise with maximal heart rate is preferred. Alternatively, an inotropic and chronotropic agent such as dobutamine stress testing, with SPECT, PET, CMR or echocardiography can be performed.

Cardiac catheterisation can be performed in people with ACAOS if the anatomy cannot be defined with non-invasive imaging and in adults with high probability for coexistent CAD. As an invasive option, the cross-sectional area of stenosis can be most accurately assessed by using intravascular ultrasound (IVUS) or optical coherence tomography (OTC) to depict the exact proximal anatomy of the anomalous vessel.

Treatment options for patients with ACAOS include surgical correction, percutaneous coronary intervention, and medical and conservative treatment. The risk calculation and decision for treatment are difficult as there is no uniform way to stratify these patients.

In patients with Malignant RCA who have symptoms such as chest pain, syncope, ventricular arrhythmia or the presence of ischaemia on stress testing should be restricted and should undergo surgical or percutaneous correction. There are no trials available that compare surgery and percutaneous coronary intervention in patients with ACAOS. The most frequently used and established surgical correction-technique is 'unroofing', where the intramural segment in the aorta is opened and a neo-ostium is created. Pulmonary artery translocation is another technique used in patients with ACAOS without an intramural course and single coronary artery[9]. The goal of this operation is to decompress the interarterial course of the anomalous vessel by repositioning the pulmonary artery confluence away from the anomalous artery either laterally or anteriorly. However, it appears that percutaneous coronary intervention is a safe and successful alternative in these patients[8].

CONCLUSION:

Although rare, coronary anomalies can present a challenge for the modern clinician. A precise anatomic description made using invasive and non invasive imaging modalities can help to stratify a patient's risk. More evidence is needed to improve risk stratification in this patient group.

Follow-up for patients with ACAOS is recommended as short- and mid-term complications may occur, depending on the procedure that was performed.

Conflicts of interest:
The authors declare that they have no conflict of interest regarding the publication of this paper.

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Ethical approval: Not required.

REFERENCES:

1. O. Yamanaka, R.E. Hobbs, Coronary artery anomalies in 126,595 patients undergoing coronary arteriography Catheter Cardiovasc Diagn, 21 (1990), pp. 28-40
2. Angelini P. Coronary artery anomalies: an entity in search of an identity. Circulation 2007;115:1296–305.
3. Grani C, Benz DC, Schmied C, et al. Prevalence and characteristics of coronary artery anomalies detected by coronary computed tomography angiography in 5,634 consecutive patients in a single centre in Switzerland. Swiss Med Wkly 2016;146:w14294.
4. C. Erol, M. Seker: Coronary artery anomalies: the prevalence of origination, course, and termination anomalies of coronary arteries detected by 64-detector computed tomography coronary angiography ,J Comput Assist Tomogr, 35 (2011), pp. 618-624
5. Maron BJ, Haas TS, Ahluwalia A, et al. Demographics and epidemiology of sudden deaths in young competitive athletes: from the United States National Registry. Am J Med 2016;129:1170–7.
6. Gajjar K, Khurana A, Patil A, Noor A, Meng J. Incidentally diagnosed anomalous right coronary artery with an interarterial course presenting as chest pain. Cureus 2019;11:e5264.
7. Suryanarayana P, Lee JZ, Abidov A, Lotun K. Anomalous right coronary artery: case series and review of literature. Cardiovasc Revasc Med 2015;16:362–6.
8. Angelini P, Uribe C, Monge J, et al. Origin of the right coronary artery from the opposite sinus of Valsalva in adults: characterization by intravascular ultrasonography at baseline and after stent angioplasty. Catheter Cardiovasc Interv 2015;86:199–208.
9. Christoph grani, Philipp A Kaufmann, Stephan Windecker, Ronny R Buechel. Diagnosis and management of anomalous coronary arteries with a malignant course.Interventional cardiology review 2019; 14(2):83-8.