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Original Research Paper

Anatomy

MYOCARDIAL BRIDGING & SHEPHERD'S CROOK PRESENTATION OF RCA – CASE REPORT

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ABSTRACT Heart receives its arterial supply by coronary arteries that have an epicardial course. Rarely they pass through myocardial bridges that narrows its lumen and decreases the blood flow during systole. Myocardial bridges have phylogenic origin and described in lower vertebrates. Normally right coronary artery passes through atrioventricular groove without bending. Rarely it shows high tortuous bend known as shepherd's crook artery. The present case showed myocardial bridges on right coronary artery and its shepherd crook's presentation. Coronary arteries supply the heart during diastole and myocardial bridges are significant in conditions of tachycardia which decreases the diastolic period. Shepherd's crook artery will need special attention as it creates disturbances in procedures on right coronary artery.

KEYWORDS : Coronary Artery. Myocardial Bridges, Diastole

INTRODUCTION:

Coronary arteries provide blood supply to heart. They have an epicardial course and sometimes these vessels will run through myocardium and return to epicardium. This pattern of vessel covered by myocardium is known as myocardial bridges and this tunneled segment will show arterial narrowing during systole. Myocardial bridges have phylogenic origin. Research on mammalian species explained that in rat, rabbit the arteries run intramuscularly, in dogs & humans epicardially with occasional myocardial bridges (MB) and in horse and cow the myocardial bridges does not exist .This evolutionary history explains that myocardial bridges are congenital in origin.(1,2). Angina, myocardial ischemia, left ventricular dysfunction, and exercise induced ventricular tachycardia are sequel of myocardial bridging. Right coronary artery (RCA) after its origin from right anterior aortic sinus passes through the right coronary sulcus and supplies its territory. Rarely it takes a bend immediately after its origin from aorta known as shepherd's crook RCA. This presentation will complicate the percutaneous interventions on the RCA.(3)

Case Report:

During dissection of thorax for undergraduate medical students of 1st MBBS, heart was removed from middle mediastinum .Coronary arteries were traced to read its blood supply. In this specimen RCA immediately after its origin from aorta showed a bend that was present in the coronary sulcus.A ventricular branch arose from this loop and supplied the right ventricle. The subsequent course of this vessel was covered by myocardium till the inferior border of the heart. Rest of RCA showed normal branching pattern with mild tortuosity .Left coronary artery after its origin from left posterior aortic sinus divided into Left circumflex artery and Left anterior descending artery (LAD). The initial small segment of LAD was covered by myocardial bridge and rest of its course was normal.(fig.1)



FIG.1 Showing myocardial bridges & Shepherd's crook RCA

RA-right atrium,RCA-right coronary artery,RV-right ventricle,LV-left ventricleLAD-left anterior descending arteryMB-Myocardial bridges

DISCUSSION:

Myocardial bridging a congenital benign condition having a intra myocardial route of a segment of major coronary arteries. It is a common anomaly having phylogenitic origin and was recognized at autopsy by Reyman in 1737 and angiographically identified by Portmann & Iwig in 1960.(4,5)

Even though it is a congenital condition, symptoms don't develop before third decade as these vessels supply the heart during diastole. Myocardial bridging is generally confined to the mid LAD artery and less frequently circumflex artery and occasionally seen in RCA.(6)

In myocardial bridging there is systolic narrowing of an epicardial artery which resolves completely during diastolic phase .Systolic compression doesn't compromise it supply unless there is increased heart rate decreasing the diastolic filling of coronary vessels .Systolic kinking may cause trauma to inner layer and damage the endothelium leading to thrombus formation.(7).Tachycardia increases the ischemic effect on the myocardium increasing the importance of systolic flow.(8)Ishikawa et. al describe that tunneled segment of coronary artery was free of atherosclerotic lesion compared to the segment proximal to the bridge.(9)

In shepherds crook presentation the right coronary artery is superiorly oriented and curved.Eventhough it is not clinically significant, it is difficult to pass a catheter beyond the kink of the shepherd's crook (10,11). Coronary angiograms are very important tool to know the patency of coronary vessels in myocardial infarction. Anomalous and rare presentation of right coronary artery needs special catheters to avoid complications during the procedure.

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