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Original Research Article

STUDY OF MEDIAN BRANCHES OF LEFT CORONARY ARTERY IN ADULT HUMAN HEART

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Abstract
The aim of this study is to study the incidence of median branches of left coronary artery in 76 adult human hearts using dissection method. In our study the incidence of one median branch of left coronary artery is 14.6% cases (11 out of 76 specimens) and 2 median branches in 4% cases (3 out of 76 specimens). As coronary artery disease is one of the major cause of death in developing countries, the knowledge and incidence of such coronary artery patterns will be useful in diagnostic and therapeutic interventional procedures. This study would be significant for proper interpretation of coronary angiographies, proper management of patient undergoing percutaneous coronary intervention as well as surgical myocardium revascularization.
Keywords: Branching pattern, Left Coronary Artery, Bifurcation

Introduction

The Left main coronary artery arises from left posterior aortic sinus and the initial portion of left main coronary trunk is embedded in subepicardial fat and has no branches. Left main coronary artery after reaching the atrio-ventricular groove divides into left anterior descending and left circumflex artery. Then anterior interventricular artery gives right and left ventricular branches. Usually the first diagonal artery of the is often large and may arise separately from the trunk and called as trifurcation sometimes duplicates and is called Quadrifurcation.

According to Baptista et al, The Left coronary artery shows three types of division i.e Bifurcation, Trifurcation and Quadrifurcation. Bifurcation is left main coronary artery branching into left anterior descending artery and left circumflex artery. In trifurcation the median artery arises in between the branches of left anterior descending and left circumflex artery. The artery is named as ramus diagonals. In Quadrifurcation the two median branches were named as ramus diagonalis I and ramus diagonalis II.[1]

The artery arising between the left circumflex and left anterior descending artery has also been termed as arteria diagonalis by Crainicianu,[2] Banchi,[3] named it as median artery. Other terms used for this artery are intermediate artery,[4] ramus lateralis,[5] ramus obliqus,[6] Marginal ramus[7]. The majority of authors preferred using Ramus diagonalis for these median branches. Verna E et al stated that these diagonal branches usually have a short course and are present over the surface of the ventricle. They have unusual anatomic course and they do not travel along the cardiac groove.[8]

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Materials and methods

This study was done on 76 adult human hearts. The specimens were collected from the cadavers during routine dissection for undergraduate medical students from Bidar institute of Medical Sciences as well as from the nearby medical colleges of Karnataka and Maharashtra. By cutting the ribs and sternum, the thoracic cavity was opened, the great vessels of the heart were ligated. The heart taken out of the pericardial cavity. The specimen was washed thoroughly and preserved in 10% formalin. The number of coronary arteries were first noted. The origin of the left coronary artery was found and dissected along its course, any variation in the division of main trunk of left coronary artery is noted.

Result

In our study the incidence of one median branch of left coronary artery is 14.6% (11 specimens) and 2 median branches is 4% (3 specimens).

Discussion

The observation of one median branch in our study is similar to study done by Sinha et al.[9] Whereas in all other studies i.e Baptista et al,[10] Hirak das et al[11] the incidence was higher.

The observation of our study for incidence of 2 median branches of left coronary artery was similar to the study done by Kalbfleisch H et al (4.7%).[6] The incidence of 2 median branches of our study is higher when compared to the study done by Crainicianu A et al (1%)[2], whereas the incidence is lower when compared to the studies done by Banchi et al (13.8%)[3] and Leguerrier A et al (7%) [5].

According to Kosar P et al, the presence of ramus diagonalis can be a cause for misdiagnosis and can cause technical difficulties during coronary angiography or surgical procedures.[13]

Pawel Tyczynski et al stated that when additional branches arising from the left main coronary artery, percutaneous coronary intervention will be more challenging.[12]

Almira lujinovic et al, The median branches or ramus diagonal branches along with their anastomosis they form an important way for collateral blood flow under conditions of coronary insufficiency.[13]

Galbraith et al found that presence of ramus intermedius was associated with more proximal left anterior desending artery lesions which would lead to larger anterior infarctions. [14]

Dr Rachana Agarwal, The ramus diagonalis are described as a source of arteries supplying anterior papillary, anterior wall of left ventricle and anterior portion of septum. Hence in occlusion of left coronary artery and its branches more area is affected.[15]

Conclusion

The study of median branches of left coronary artery will be helpful for clinicians, radiologists and physicians as the percutaneous intervention of these arteries will be very much complex. Since these arteries are not their in their anatomical groove the procedure of stenting also becomes difficult. Hence adequate knowledge of incidence of median branches of left coronary artery is important for interpretation of coronary angiography, stenting procedures and myocardial revascularisation,

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