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RESEARCH ARTICLE

Myocardial Bridge-Congenital Anomaly

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ABSTRACT

Myocardial bridging is a congenital coronary anomaly defined as a segment of a major epicardial coronary artery goes intramurally through the myocardium beneath the muscle bridge. In our study we dissected 20 human heart specimens to observe the myocardial bridges over the left anterior descending branch of left coronary artery. Out of 20 specimens the myocardial bridges are located at a distance between 21-30 mm in 14 heart specimens (70%), 31-40 mm distance in 4 heart specimens (20%) and 41-50 mm in 2 heart specimens (10%) were observed. Myocardial bridge has been associated with angina, arrhythmia, depressed left ventricular function, myocardial stunning, and early death after cardiac transplantation, sudden death. The results of the study were compared with other literatures and significance variations are noted.

KEYWORDS: myocardial bridge, cardiac pathology, tunnelled artery

INTRODUCTION:

Myocardial bridge is the most common, and potentially benign, congenital anomaly of coronary arteries [1].Muscle overlying the intra myocardial segment of an epicardial coronary artery is termed as myocardial bridge, and the artery coursing within the myocardium is called a tunnelled artery [2,3].Myocardial bridging usually has a benign prognosis, but some cases associated with myocardial ischemia, infarction, coronary spasm, arrhythmias and sudden death have been reported [4,5].Anomalous origin and distribution of the coronary arteries were shown to be a cause of sudden death in young and adult patients, often in association with physical exertion[6]. Coronary artery anomalies when occur pose difficulty with coronary visualisation, identification and present unique problems for surgical treatment.

MATERIALS AND METHODS:

A total (n = 20) heart specimens were collected with a portion of ascending aorta from relatively fresh bodies that came for post-mortem at the Forensic Department,S.V.Medical College, Tirupati. Each specimen thoroughly washed to free it from the blood clots and dissected. The arterial pattern of heart from the origin of the coronary arteries to their termination observed and variations are recorded. The location and incidence of myocardial bridges in relation to left anterior descending branch of left coronary artery were observed and photographed.

RESULTS:

In the present study 20 human heart specimens were dissected and observed for the myocardial bridges over the left anterior descending branch of the left coronary artery. Out of 20 specimens the myocardial bridges are located at a distance between 21-30 mm in 14 heart specimens (70%), 31-40 mm distance in 4 heart specimens (20%) and 41-50 mm in 2 heart specimens (10%) were observed, recorded and photographed (Figure-I).The myocardial bridges at a distance from less than 20 mm and more than 50 mm from the coronary Ostia are not found in relation to the left anterior descending branch of the artery.

Distance from the origin of left coronary Ostia	No. of Specimens	Incidence (%)
Less than 20 mm	---	---
21 -30 mm	14	70
31-40 mm	04	20
41-50 mm	02	10
More than 50 mm	---	---

Table- I: Incidence of myocardial bridges in relation to left anterior descending branch of Left Coronary Artery

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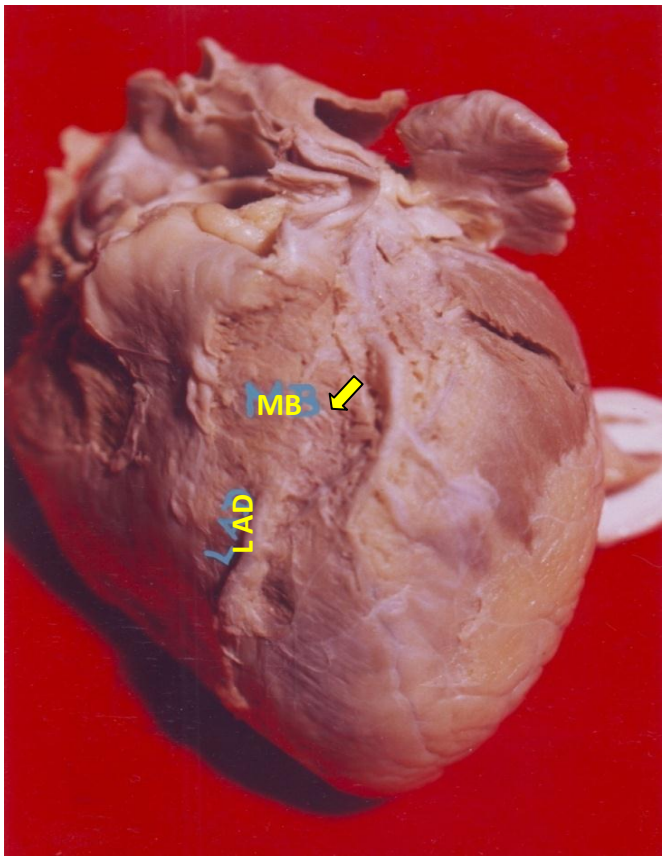

Legend

Figure –I: Dissection of human heart showing the myocardial bridging over the left anterior descending branch of left coronary artery *(MB: myocardial bridge; LAD: left anterior descending branch)*

DISCUSSION:

The incidence of myocardial bridges in relation to left anterior descending branch of left coronary artery are shown (Table – I). The location of the myocardial bridges from the origin of left coronary artery at a distance of 21 to 30 mm in 70% of hearts, 30-40 mm in 20% of hearts and 41-50 mm in105 of hearts .The presence of myocardial bridges are noticed more in relation to left anterior descending branch of left coronary artery [7]. The main arteries and major rami are usually subepicadial, but those in the atrioventricular and interventricular sulci are often deeply sited, occasionally hidden by overlapping myocardium and more than 80% of ventricular chambers [7, 8]. The importance of interpretation of a coronary arteriogram in relation to myocardial bridges was emphasized [9]. The incidence of this anomaly is higher in women than in men. It is found in 5%-86% in anatomic studies but only observed in 0.5% to 12% of patient undergoing coronary arteriography [10]. The incidence of myocardial bridge was found to be 22% [11]. High incidence of myocardial bridge in Taiwanese and Japanese population and thought this may be one of the important factors accounting for the lower incidence and lesser severity of coronary atherosclerosis in Asians [12,13]. Polacek& Ferreira reported 85.7% incidence of myocardial bridge in 70 hearts and claimed a prevalence rate about 55.6% in necrotic study of 90 hearts [8, 14].In a study of 82 heart specimens the incidence of myocardial bridge were observed 54% out of which 34% are located over to left anterior descending branch of left coronary artery[15].

CONCLUSION:

The occurrence of myocardial bridges in relation to left anterior descending branch of left coronary artery are present at a distance of 21-30 mm from its origin from the main trunk in majority of the cases, and this may be the causative factor for more frequent involvement of this branch leading to anteroseptal infarcts and arrhythmias due to the involvement of the purkinjee conducting system of heart [4, 5]. The occurrence of myocardial bridges pose definite problem in the interpretation of normal coronary angiographic studies.

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REFERENCES:

1. Ishikawa Y, Kawawa Y, Kohda E, Shimada K, Ishii T; 2011. Significance of the anatomical properties of a myocardial bridge in coronary heart disease. Circ J. 75:1559–66.
2. Reyman HC; 1737. Disertatio de vasis cordis propriis. *Med Diss Univ Göttingen*.7th Sept; 1–32.
3. Hadziselimovic H, Dilberovic F, Ovcina F; 1980. Blood vessels of the human heart; corona angiography and dissection. Acta Anatomica 106: 443 - 449.
4. Mazzu A, Di Tano G, Cogode R, Lo Presti G; 1995.Myocardial bridging involving more than one site of the left anterior descending coronary artery: an uncommon cause of acute ischemic syndrome. Cathet Cardiovasc Diagn. 34:329-332.
5. Tauth J, Sullebarger T; 1997.Myocardial infarction associated with myocardial bridging: case history and review of the literature. Cathet Cardiovascular Diagn. 40:364-367.
6. Sakuma M, Kamishirado H, Inoue T, Ichihara M, Takayanagi K, Hayashi T;2002.Acute myocardial infarction associated with myocardial bridge and coronary artery vasospasm. Int J Clin Pract. 56:721-722.
7. Williams PL, Bannister LK, Berry MM, Collins P, Dyson M, Dussek JE, Ferguson MWJ; 2000. Grays Anatomy. 38th Ed., Edinburgh, Churchill Livingstone; 1505-1510.
8. Polacek P; 1961. Relation of myocardial bridges and loops on the coronary arteries to coronary occlusion. Am Heart J; 61:44-52.
9. Bloor, C.M, Lowman R.M; 1963.Myocardial bridges in coronary atherosclerosis; Am.heart.J.65; 195-197.
10. Laifer LI, Weiner BH; 1991.Percutaneous transluminal coronary angioplasty of a coronary artery stenosis at the site of myocardial bridging. Cardiology; 81:198-202.
11. Geiringer E; 1951. The mural coronary. Am Heart J; 41:359-368.
12. Lee SS, Wu TL; 1972. The role of mural coronary artery in prevention of coronary atherosclerosis. Arch Pathol; 93:32-35.
13. Ishii T, Hosoda Y, Osaka T, et al; 1986.The significance of myocardial bridge upon atherosclerosis in the left anterior descending coronary artery. J Pathol; 148:279-291.
14. Ferreira AG Jr, Trotter SE, Konig B Jr, Decourt LV, Fox K, Olsen EG; 1991. Myocardial bridges: Morphological and functional aspects. Br Heart J; 66:364-367.
15. Baptisda CAC, DiDio LJA; 1992.The relationship between the directions of myocardial bridges and the branches of the coronary arteries in the human heart. *Surg Radiol Anat*; 14:137–140.