ORIGINAL ARTICLE

To Determine the Origin of Posterior Interventricular Artery

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ABSTRACT:
Background: Cardiovascular disease (CVD) is one of the leading causes of mortality and morbidity in India. The present study was conducted to determine the origin of posterior interventricular artery. **Materials & Methods:** The present study was conducted in the department of Anatomy. It comprised of 60 formalin fixed adult heart specimens. Visceral pericardium was stripped and subepicardial fat was removed and the coronary arteries were examined by gross dissection. **Results:** Out of 60 patients, 32 hears were of males and 28 were of females. Right pattern was seen in 32, left in 18 and balanced in 10. The difference was significant (P< 0.05). **Conclusion:** Authors found that most commonly occurring dominance was right side followed by left and balanced type.
Key words: Coronary, Pericardium, Visceral.

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INTRODUCTION

Cardiovascular disease (CVD) is one of the leading causes of mortality and morbidity in India. Recent trends indicate that the disease has escalated to younger age groups also. It is seen significantly both in males and females irrespective of socio economic status. A complete knowledge of the coronary circulation is an increasingly vital component in the management of congenital and acquired.[1]
The term 'Coronary' comes from the Latin term "Corona" meaning "Crown". The heart is normally supplied by two coronary arteries:[2] Right coronary artery (RCA) and left coronary artery (LCA). Coronary arteries are known for their wide variations with regard to origin, course, termination and branching pattern. There are also wide regional variations which have not been dealt with enough in the standard books.[3] The present study is focused on the population of Assam, which is derived from the Mongoloid race and thus ethnically unique from the rest of India. The Mongoloids are characterized by wide and short face, projecting cheek bones, low broad nose and short stature. Thus a region specific study of the coronary arteries would help both cardiac surgeons and radiologists in dealing better with the coronary heart disease. The most common is right dominant pattern, which is present in approximately 67% of people. In approximately 15% of hearts the LCA is dominant, in which the PIV artery is a branch of circumflex artery.[4] The present study was conducted to determine the origin of posterior interventricular artery.

MATERIALS & METHODS

The present study was conducted in the department of Anatomy and Physiology. It comprised of 60 formalin fixed adult heart specimens. The study protocol was approved from institutional ethical committee.
Data such as age, sex and socioeconomic status was recorded. Visceral pericardium was stripped and subepicardial fat was removed and the coronary arteries were examined by gross dissection. Results were tabulated and subjected to statistical analysis. P value less than 0.05 was considered significant.

RESULTS

Table I Distribution of patients

Total- 60		
Gender	Males	Females
Number	32	28

Table I, graph I shows that out of 60 patients, 32 hears were of males and 28 were of females.
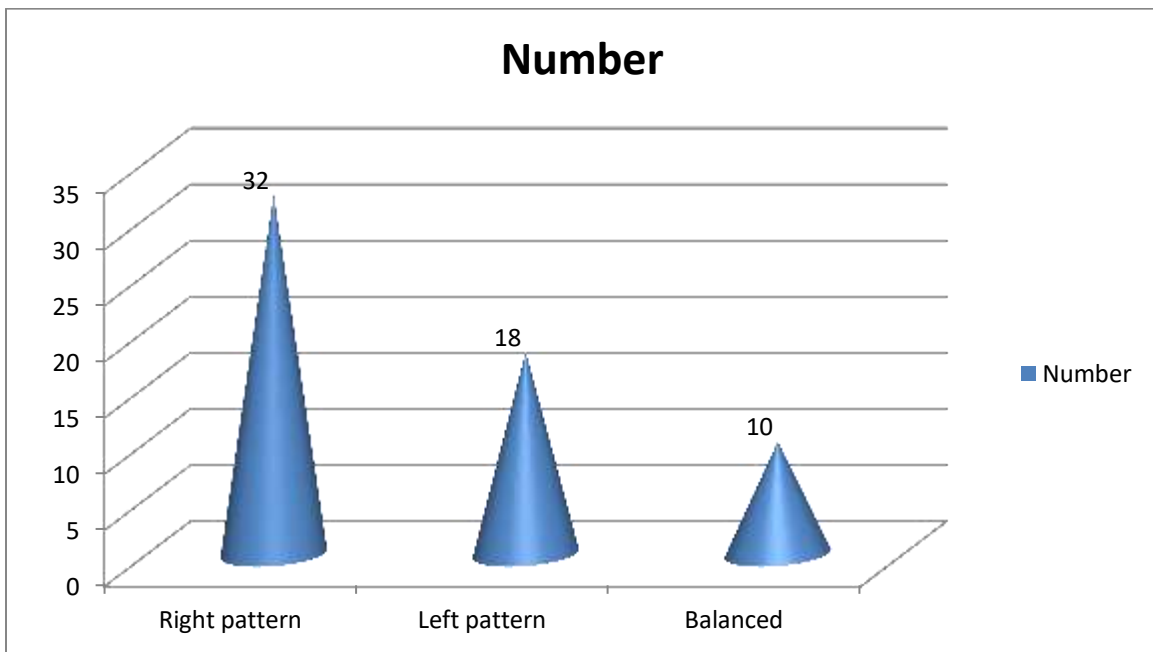
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Graph I Distribution of patients
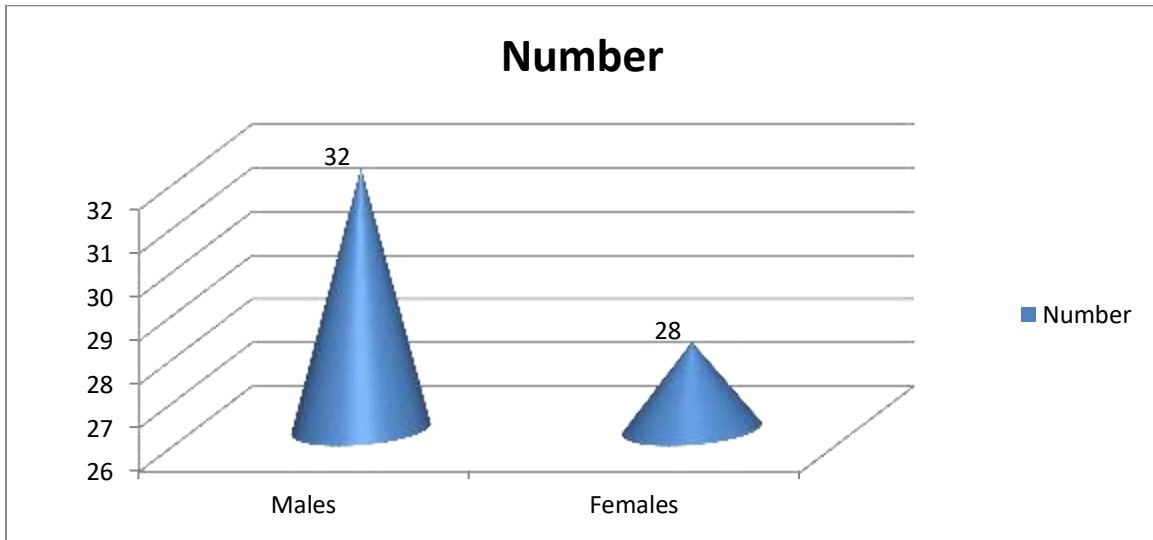
Table II Assessment of Dominance pattern

Pattern	Number	P value
Right pattern	32	0.01
Left pattern	18	
Balanced	10	

Table II, graph II shows that right pattern was seen in 32, left in 18 and balanced in 10. The difference was significant ($P < 0.05$).

Graph II Assessment of Dominance pattern

DISCUSSION

Dominance pattern of heart has important clinical significance. Left dominance was found to have significantly higher mortality than right dominance and mixed types. Dominance also showed a role in left anterior descending (LAD) artery stenosis.[5] It was observed that in left dominance, the LAD usually wraps around the apex of the heart, supplying major portion of the myocardium. In contrast, in right dominance, it was the posterior interventricular branch of the right coronary artery that supplied most of the myocardium. As such, lesions in LAD would have more profound clinical importance in a left dominant heart than in a right dominant one.[6] Dominance also plays an important role in inferior infarcts of the heart. Inferior wall infarcts although less extensive than anterior infarcts are more important as they can cause various degrees of atrioventricular block in approximately 30 % of cases. The dominant RCA usually supplies the atrioventricular (AV) node. Therefore an inferior wall infarct caused by occlusion of the RCA will have higher risk of AV block.[7] The present study was conducted to determine the origin of posterior interventricular artery.

In present study, out of 60 patients, 32 hears were of males and 28 were of females. Veltman et al[8] conducted a study on 50 formalin fixed adult heart specimens in the Department of Anatomy. The coronary arteries were examined by gross dissection and analyzed statistically. Right preponderance was seen in 31(62%) hearts, left preponderance in 11 (22%) hearts and balanced or codominance was seen in 8(16%) hearts. The coronary artery dominance has an important clinical significance. On comparison right dominance was statistically insignificant (z = 0.91, p = 0.36), left dominance was statistically insignificant (z = 0.46 , p = 0.64), and balanced pattern was also statistically insignificant.

We found that right pattern was seen in 32, left in 18 and balanced in 10. Seventy cadaveric hearts were studied. The modes of termination of the right coronary artery and the circumflex artery were described with the help of five points: at the right border, between the right border and the crux, at the crux, between the crux and the left border and at the left border. Origin of the posterior interventricular artery was taken as the basis of dominance. Right dominance was found in 70%, left dominance was found in 18.57% while balanced pattern was observed in 11.43% hearts. The results of the study were compared with other authors and variations were noted.[9]

Murphy et al[10] has noted in their study that patients with left dominance have a shorter left main coronary artery than patients with right dominance. The increased prevalence of a dominant left coronary arterial system in aortic stenosis suggests that this may be part of a developmental complex. They also have an increased risk of perioperative myocardial infarction if there is associated obstructive coronary artery disease.

CONCLUSION

Authors found that most commonly occurring dominance was right side followed by left and balanced type.

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