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Original Article

Angiographic study of Coronary Artery Dominance in Nepalese Population

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Abstract

Background

The dominance of coronary artery in our population is not known. This study aims to identify dominant coronary artery in Nepalese population.

Material and Methods

This study was carried out in the Cath Lab of Manmohan cardiovascular and thoracic centre Kathmandu over a period of 18 months (August 2012 to April 2014). All patients of either gender who presented to the Cath lab for coronary angiography for different indications were included in the study. Patients with congenital heart diseases who were below the age of 18 years were excluded.

Results

A total of 667 patients were enrolled out of which 69% (n=488) were male and 31% (n=219) were female. The mean age was 51.3(30-76) years. Right coronary artery was dominant in 83%, left dominant in 10% and co-dominant in 7% of the patient population.

Conclusion

The right coronary dominant pattern is more prevalent in our population. Gender has no significant association with coronary dominance.

Key Words: *Coronary angiography, Dominant coronary artery, gender difference*

Introduction

Two main coronary arteries (left and right) arise from the ascending aorta. Left main coronary artery divides into left anterior descending (LAD) and left circumflex (LCx) artery. Right coronary artery divides into posterior descending artery (PDA) and posterolateral branches (PLBs). LAD supplies blood to the front of the left side of the heart. LCx supplies blood to the back and the lateral side of the heart. RCA supplies blood to the right atrium, right ventricle, SA node, AV node and variable portion of left ventricle [1].

Coronary artery dominance is classified as left dominance, right artery dominance, and co-dominant [2]. The dominant vessel supplies the posterior descending artery and at least one posterolateral branch. The RCA is dominant in 85% of patients. The RCA is non dominant in 15% of patients in which one half have PDA and posterolateral branch arising from the distal circumflex artery called left dominance and in the remaining half the RCA gives rise to PDA and the LCx provides all the posterolateral branches called co dominant circulation [1]. The pattern of dominant vessel varies in different populations. The

dominant pattern has clinical significance as the ECG changes and the region of involvement in ST segment elevation myocardial infarction is different. Knowledge of coronary artery variations and pathologies is important in planning the treatment and in interpretation of findings of cardiovascular diseases. This study aims to determine the pattern of coronary artery dominance in our population.

Material and Methods

This case series study was carried out in Cath Lab of Manmohan cardiovascular and thoracic centre Kathamandu over a period of 18 months. All patients of either gender over 18 years of age who presented to the Cath lab for coronary angiography for different indications were included in the study except those who had congenital heart diseases. The demographic profile of the patients and pattern of coronary artery dominance were recorded on a proforma. All standard views were taken during coronary angiography with special focus on left anterior oblique cranial view to document left dominant system. The data were analyzed through SPSS version 16. Various descriptive statistics were used to calculate frequencies, percentages and means values. Numerical data such as age were expressed as mean ± standard deviation while the categorical data were expressed as frequency and percentages.

Results

A total of 667 patients underwent diagnostic CAG during the specified period. Two hundred and ninety (31%) were women and four hundred and eighty-eight (69%) were men.

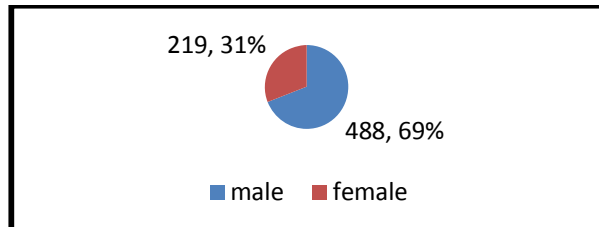


Fig 1. Gender distribution

The mean age was 51.3 years. Age range was 30-76 years. Right coronary artery was dominant in 83%,

left dominant in 10% and co-dominant in 7% of the patient population.

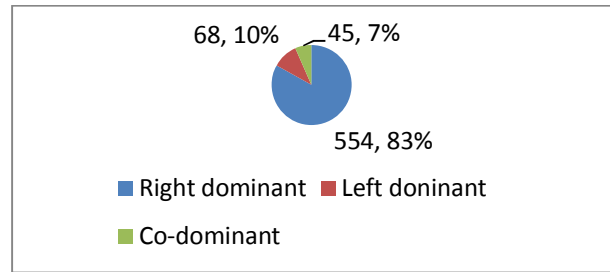


Fig 2 Coronary artery dominance

Among the right dominant group 416 were male and 138 were female. In the left dominant group 64 were male and 24 were female. In co-dominant group 28 were male and 17 were female.

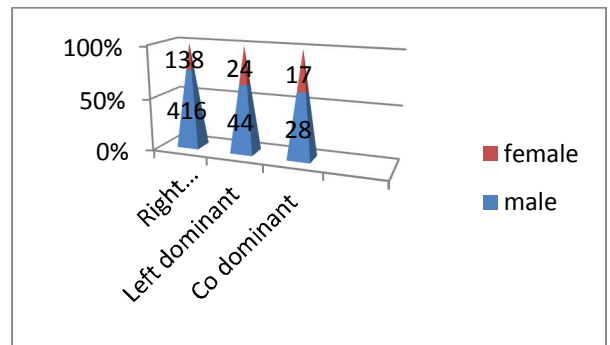


Fig 3. Gender wise distribution of coronary dominance

Discussion

In our study, 83% had RCA dominance, 10% had LCx dominance and 7% had co-dominant coronary circulation. There is no significant difference in dominance pattern with age or sex. The pattern of coronary artery dominance is different in different communities. In a study by Altaii et al, right dominance was found in 83%, left dominance in 14.5% and co dominance in 2.5% cases [3]. The prevalence of right dominance in studies reported from Kenya, Brazil, and Iran has also been same with the range 82% - 84.2% [4-6]. However, right dominance was significantly less common (60.5%) in a study from Pakistan [7]. Nearly 20% subjects each in this study had either a dominant LCX or a co-dominant pattern.

In all the studies right dominance was the most common type though the frequency differs in different study. Right dominant circulation was more prevalent in our study also. This finding is in conformity with what is reported in the published literature.

Limitations

This is study of single Centre with 667 patients. The numbers are small and only of one centre. Large number of patients with multicentre involvement is recommended to find out coronary artery dominance in Nepalese population. However as in other studies, this study also showed Right dominance is most common pattern of coronary dominance.

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