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CORONARY ARTERY VARIATION IN KASHMIRI POPULATION.. CT ANGIO STUDY.

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ABSTRACT:

BACKGROUND: The configuration of coronary arteries differs significantly among different populations, influencing the outcomes of clinical trials and the techniques employed for intervention.

AIM and OBJECTIVES: This study aims to explore coronary variations within the Kashmiri community through angiographic analysis.

MATERIAL AND METHODS: The present study was carried out in Government Medical College Srinagar. The research comprised 30 participants, 21 of whom were male and 9 were female. The female ages ranged from 40 to 89 years old, with an average of 56.4±10.22 years. The men's ages ranged from 30 to 89 years old, with an average of 56.1±10.83 years.

RESULTS: Out of all the subjects 26 (86.67%) had dominance of the right coronary artery, 3 (10%) had dominance of the left coronary artery, and 1 (3.33%) had co-dominant circulation.

CONCLUSION: Our study showed that there are specific variations in prevalence that distinguish Kashmiris from other ethnicities. This indicates that the population of Kashmir has a unique coronary profile. These variations could significantly impact the accuracy of diagnoses, the success of procedures, and the outcomes for patients receiving interventional cardiology treatment. To completely recognize the scientific results and enhance care techniques for coronary artery disorder in Kashmiri community, extra studies with larger samples and longitudinal follow-up is needed

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KEYWORDS: CORONORY ARTERY, CORONARY VARIATIONS, ANGIOGRAPHY, KASHMIRI.

INTRODUCTION

Coronary artery disease (CAD) is a major health concern because of its morbidity and mortality. To provide the correct diagnosis, appropriate therapy, and improve patient outcomes, it is essential to understand the structural differences of coronary arteries. While many populations' coronary arteries' architectural variations have been thoroughly researched, data on the Kashmiri population is scarce. Unique ethnic and demographic characteristics are on display in the Kashmir Valley, which is situated in the foothills of the Himalayas.[1] Kashmiri's provide a fascinating study subject for looking into coronary artery variations. The complex interaction between hereditary tendencies, environmental variables, and lifestyle choices makes it necessary to conduct targeted investigations to identify the unique cardiac architecture of Kashmiris. The structural variations of coronary arteries can be better understood with the use of angiography, the most reliable method for viewing these arteries.[2] The expected differences in cardiac architecture among Kashmiris may be caused by a variety of possible causes. Genetic predispositions may be greatly affected by ancestry and consanguineous marriages in the area [3].Coronary artery shape and function in Kashmiri individuals may be influenced differently by environmental factors such as food habits, altitude, and climate. Discovering the causes of coronary artery abnormalities in Kashmiris is important for more than just academics. Better risk assessment, procedure planning, and diagnostic tool selection can be achieved in clinical practice by gaining more knowledge about the unique anatomical features of this population [4]. Healthcare practitioners in Kashmir can improve the accuracy of coronary artery evaluations, decrease procedural difficulties, and maximise patient outcomes by detecting and accounting for any anatomical variances[5]. Cardiovascular health in the Kashmiri people may be better understood as a result of this study. By analyzing trends in coronary artery variants and how they relate to clinical variables, we aim to gain more insight into the causes of CAD in this population.This new information could help guide efforts to improve cardiovascular outcomes for Kashmiris and reduce the prevalence of coronary artery disease. Research on coronary artery

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variations in Kashmiris has great potential to shed light on the cardiovascular health of this distinct people.

Coronary variations in global populations: Variations in the coronary arteries are those that deviate from the normal structure of the coronary arteries. The differences can impact diagnostic imaging, interventional treatments, and the treatment of cardiovascular illnesses, all of which can have major effects on patient care. A wide range of racial and regional variations are seen in the coronary artery architecture. Because of their potential impact on cardiovascular disease diagnosis, management, and outcomes, healthcare clinicians throughout the world must have a thorough understanding of these difference[6].

There are clear regional and racial variances in coronary architecture, according to the research. As an example, studies show that left dominant coronary circulation is more common in people of African heritage than in Caucasians [7] . The impact of both hereditary and environmental variables on coronary morphology has been demonstrated by studies that compared people across continents and found varying patterns of branching and dominance of coronary arteries[8]. Myocardial bridging, in which a section of the coronary artery passes across the myocardium, is more common among people of Asian origin than in other parts of the world **[9].** Certain groups may have a higher prevalence of variations such as aberrant origin of coronary arteries or the presence of a single coronary artery than others **[10] .**

Coronary Variations in Kashmir. In the Kashmiri community, there is a significant disparity in the incidence of some coronary abnormalities **[11]** · Various abnormalities have been seen in the coronary arteries, including changes in their origin and course, anomalies in their branching patterns, and anomalies involving the dominance of certain arteries. The high frequency of coronary abnormalities among Kashmiris is due to many causes, that includes heredity, the surrounding environment, and demographics, that may interact to affect the onset and severity of coronary abnormalities. Certain coronary anomalies may have a genetic basis, according to studies; in certain situations, there is family clustering. In addition to hereditary predispositions, environmental variables including pollution exposure, lifestyle choices, and food consumption may interact with each other to impact coronary morphology. In terms of diagnostic imaging, interventional treatments, and cardiovascular risk assessment, coronary differences in Kashmir have important clinical consequences **[12] .** Various coronary variations have been noted in the

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Kashmiri population, which is a reflection of the diversity of anatomical patterns within this ethnic group [13] .The abnormal genesis of coronary arteries stands out among the most striking cardiovascular abnormalities seen in Kashmir. Included in this category are abnormalities like the right coronary artery beginning in the left coronary sinus or the left main coronary artery emerging from the right coronary sinus. Particularly when exercising, these variants can put people at risk for myocardial ischemia, myocardial infarction, and sudden cardiac death. Similarly, Coronary Artery Dominance that is if one artery supplies the posterior descending artery (PDA), then that artery is known as the coronary dominance artery. It has been noted that there are differences in coronary dominance in Kashmir. Some people have right dominance, meaning that the PDA is fed by the right coronary artery, while others have left dominance, meaning that the PDA is derived from the left circumflex artery. High take-off coronary arteries, in which the arteries begin from a closer place than normal, and atypical branching patterns, including myocardial bridging, in which a section of the coronary artery passes through the myocardium, are examples of these abnormalities.

An irregular connection between the coronary arteries and other parts of the cardiovascular system, including the pulmonary artery or the chambers of the heart, is known as a coronary artery fistula. Coronary artery fistulas in Kashmiris are known to occur, however rarely.. Coronary abnormalities including origin, dominance, course, branching pattern, and linkages are among the many that the Kashmiri population displays [14] **.**

The significance of doing research that is particular to regions in order to better understand cardiovascular architecture and path physiology is highlighted by the fact that coronary abnormalities are common in the Kashmiri community. The structural differences of the coronaries are important for healthcare providers to be aware of while diagnosing and managing cardiovascular disorders, even though the incidence rates and kinds of these variations might vary. The genetic and environmental components that cause coronary differences in Kashmir should be further understood in future studies, and the consequences of these findings for clinical treatment should be investigated.

MATERIAL AND METHODS

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The study was conducted by cardiology department of Government Medical College Srinagar, with approval from the institution's ethics council. The research comprised male and female participants who were at least 18 years old and scheduled to have coronary angiography for a variety of reasons following standard clinical examination. Acknowledgement of risk was obtained. No patient was included in the trial if they had valvular heart disease or congenital heart defect. Thirty individuals were examined in all. This study's subjects were all of Kashmiri descent. In order to record the pattern of dominant coronary circulation, standard images were obtained with the appropriate cranial or caudal angulations. The research comprised 30 participants, 21 of whom were male and 9 were female. The female ages ranged from 40 to 89 years old, with an average of 56.4±10.22 years. The men's ages ranged from 30 to 89 years old, with an average of 56.1±10.83 years.

RESULTS

A total of 30 participants, out of whom 21 were male and 9 were female. The female ages ranged from 40 to 89 years old, with an average of 56.4±10.22 years. The men's ages ranged from 30 to 89 years old, with an average of 56.1±10.83 years. Here we may see the breakdown of the subjects by age and gender (Table 1).

Table 2 shows that out of 30 subjects, 26 (86.67%) had dominance of the right coronary artery, 3 (10%) had dominance of the left coronary artery, and 1 (3.33%) had co-dominant circulation.

Table1: Age and gender distribution

Age in Years	Female		Male		Total	
	No.	%	No.	%	No.	%
30-39	0	0.0	1	3.3	1	3.3
40 49	2	6.7	6	20.0	8	26.7
50-59	4	13.3	5	16.7	9	30.0
60-69	3	10.0	8	26.7	11	36.7
70-79	0	0.0	1	3.3	1	3.3
80-89	0	0.0	0	0.0	0	0.0

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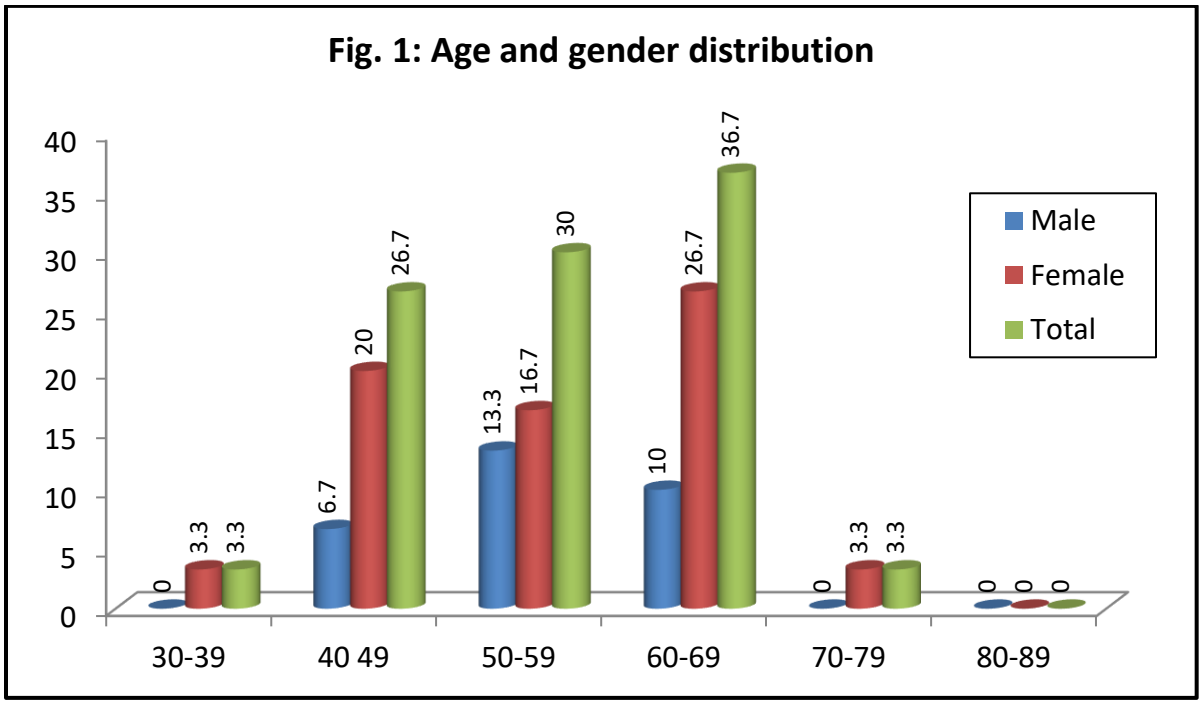
Total	9	30.0	21	70.0	30	100.0

Table2: Coronary artery dominance

Dominant Artery	Count	Percentage
Right dominance (RD)	26	86.67%
Left dominance (LD)	3	10%
Co-dominant (CD)	1	3.33%



DISCUSSION

Thirty people participated in the study, nine of whom were female and 21 of them were male. The average age of the females was 56.4±10.22 years, with a range of 40 to 89 years. The men's ages ranged from 30 to 89 years, with an average age of 56.1±10.83 years. In our study Right coronary artery dominance was seen in 86.67 percent of cases, left coronary artery dominance in 10.0%, and co-dominant patterns in 3.3% of cases. The findings of this study agree with those reported by Vishram Singh*et al*., who reported that 80.58% of patients had right coronary artery

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dominance, 11.63% had left coronary artery dominance, and 2.79% had co-dominant coronary circulation. The degree of coronary atherosclerosis is unaffected by the coronary arteries dominance[15]**.** Left dominance is a significant and independent predictor of high rates of long-term death in patients with ACS [16] **.**The quantity of blood flowing into the left ventricle is influenced by the dominance of each coronary artery [17] **.**Since the right coronary artery is typically small in people with left dominance and does not reach the acute margin of the heart, proximal stenosis of the left coronary artery may cause extensive ischaemia and worse outcomes in a left dominant system than in a right dominant system. Additionally, patients with left dominant systems may have a decreased ability to form collaterals quickly because the right coronary artery is insufficient to profuse the myocardium [18] **.** In a study done by Catherine Gebhard *et al*., [19] the right dominance was present in 91% and left dominance in 9% and they also observed a higher incidence of coronary artery disease in left dominance patients, whereas the prevalence of normal coronary arteries was more frequent in right dominance. In a similar study, Altaii*et al*., [20] reported that 83% of patients had right coronary artery dominance, 14.5 percent had left dominance, and 2.5 percent had co-dominance. Bin Yan *et al*., [21] did another investigation that reveals a 90.6% right dominant pattern, a 6.7% left dominant pattern, and a 2.7% co-dominant pattern. In addition a study done in Italy reported that right dominant pattern in 86.6%,left dominant in 9.2% and co-dominance in 4.2% of the participants [22] **.**The trend in the Netherlands study was 90.2% non-left dominant and 9.8% left dominant [23] According to a study done in Pakistan, the individuals' dominance percentages were 8.49% right, 11.3% left, and 3.8% co-dominant [24] **.** The right dominance is more common in the research described above, which is consistent with our findings.

CONCLUSION:

The angiographic investigation reveals the coronary variations within the Kashmiri community. Although the sample size is limited (only 30 patients), the results provide valuable insights into the structural features of coronary arteries in this population. The variety in coronary architecture among Kashmiris was revealed through careful examination of irregularities and patterns. To effectively diagnose and treat cardiovascular problems among Kashmiri patients, the study highlights the need to understand regional differences in coronary morphology. Clinicians can improve patient outcomes and decrease complications by minimizing the likelihood of problems by identifying these variances and then adapting treatment methods and treatments to the specific anatomical features of this population. The results provide valuable information for cardiovascular research as a whole by contributing to the knowledge base and shedding light on racial differences in coronary architecture. More research with larger samples is necessary to confirm our findings and explore other variables that impact coronary variability in the Kashmiri community. The angiographic study lays the groundwork for a more complete understanding of

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the coronary architecture in Kashmiris, which will help in clinical practice, future research, and public health efforts to reduce the burden of cardiovascular disease in this area.

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