

Frequency of Nonobstructive Coronary Artery Disease in patients admitted for Elective Coronary Angiography

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ABSTRACT

Background: Cardiovascular disease specially ischemic heart disease in Pakistan has become one of the major cause of mortality. Patients with symptoms/signs of angina non obstructive CAD may be suspected where atherosclerotic epicardial CAD does not limit coronary blood flow, but other processes may disturb myocardial supply/demand relationship

Objective: To determine the frequency of nonobstructive coronary artery disease in patients admitted for elective coronary angiography, at NICVD, Karachi, Pakistan

Methods: This Cross sectional study was done at National Institute of Cardiovascular Disease (NICVD), Karachi, Pakistan from April 16, 2021 to October 15, 2021. we included patients fulfilling the inclusion criteria. Informed consent was taken. The data was collected on prepared proforma.

Results: Mean \pm SD of age was 55.4 ± 13.2 years. Out of 151 patients, 90 (59.6%) were male while 61 (40.4%) were female, Hypertension was noted in 105 (69.5%) patients while Diabetes mellitus was documented in 71 (47%) patients and Positive family history of nonobstructive CAD was found to be in 26 (17.2%) patients, and 67 (44.4%) were smoker. Nonobstructive CAD was found to be in 35 (23.2%) patients.

Conclusion: It is to be concluded that nonobstructive coronary artery disease was documented in considerable number of patients admitted for elective coronary angiography. Further large-scale work is recommended for validation of current findings.

Keywords: Coronary Artery Disease, Elective Coronary Angiography.

INTRODUCTION

In current era Cardiovascular disease prevalence is increasing become one of the leading causes of mortality and disability in Pakistan. Due to this Cardiac Catheterization labs are opening increasingly in both public and private sectors¹. Some cardiologist are considering Cardiac catheterization as the gold standard for CAD diagnosis. Guidelines are with Consensus for diagnosis and treatment of stable ischemic heart disease are mainly shaped by the amount of epicardial disease. Therefore, patients of non obstructive coronary artery disease with symptoms and signs of ischemia is always challenging to treating consultants. During coronary angiography diagnosis of Vasospastic angina (VSA) and Microvascular angina (MVA) poses difficulty and are rarely identified. Assessment of coronary vascular function directly or by using pharmacological agents are important tool.² Some previous studies have studied the frequency of non obstructive coronary artery disease but their results are variable. This study will provide frequency in our setup as very little local data available and will suggest for early assessment and efficient management coronary artery disease³.

MATERIAL AND METHODS

This is a Cross sectional study was conducted at National Institute of Cardiovascular Disease (NICVD), Karachi, Pakistan from April 16, 2021 to October 15, 2021. we included 151 patients fulfilling the inclusion criteria using Non-Probability, Consecutive Sampling admitted for elective coronary angiography of Age between 30-70 years both male and female, presenting with chest pain .we excluded Patient with prior history of heart disease, prior history of CABG or PC or admitted for emergency cardiac catheterization after approval of ethical committee and explaining to patient informed consent was taken. The data was collected on prepared proforma The demographics were obtained which included registration number, admission number, gender, age, and risk factors (diabetes, cigarette smoking, hypertension, family history of heart disease. Height and weight. Conventional coronary angiography was performed via right femoral artery approach to assess outcome variable i.e. nonobstructive coronary artery disease (less than 50% diameter seen stenosis in coronary

arteries on coronary angiogram) by researcher himself under the supervision of consultant > 5 years of experience.

Data was analyzed by using SPSS version-23. Mean \pm SD were calculated for age (years), weight (kg), height (cm) and BMI. Frequency and percentages were calculated for gender, hypertension, diabetic mellitus, family history of nonobstructive CAD, smoking status, and outcome variables i.e. nonobstructive CAD. Effect modifiers were controlled through stratification of age, gender, BMI, hypertension, diabetic mellitus, family history, and smoking status to see the impact of these on outcome. Post stratification, chi-square test or fisher exact test was applied. p-value of < 0.05 was taken as criteria of statistical significance.

RESULTS

151 patients were enrolled in our study to assess the nonobstructive coronary artery disease in patients admitted for elective coronary angiography, at NICVD, Karachi. The mean age was 55.4 ± 13.2 while mean height was of 162.5 ± 14.6 cm, mean weight was 65.4 ± 10.4 in kg and mean body mass index was of 27.8 ± 6.3 kg/m² as shown in table 1 .Out of 151 patients, 90 (59.6%) were male while 61 (40.4%) were female, Hypertension was noted in 105 (69.5%) patients while Diabetes mellitus was documented in 71 (47%) patients and Positive family history of nonobstructive CAD was found to be in 26 (17.2%) and Out of 151 patients, 67 (44.4%) were smoker as in table 2.

Table 1: Descriptive Statistics of demographics

	Range	Mean
Age (years)	30-70 yrs	55.4 \pm 13.2
Weight(kg)	48-99 kg	65.4 \pm 10.4
Height (cm)	160-170	162.5 \pm 14.6
BMI	27-35	27.8 \pm 6.3

Table 2 Gender distribution of the participants

	Frequency	Percentage
Gender		
Male	90	59.6%
Female	61	40.4%
DM	71	47%
Hypertension	105	69.5%
Smoker	67	44.4%
Positive family history	26	17.2%

Table 3 Frequency of non-obstructive CAD

	Non OBSTRUCTIVE CAD		P value
	Yes	No	
Age			
35 – 50	18 (11.9%)	32 (21.2%)	0.009
50-70	17 (11.3%)	84 (55.6%)	
Gender			
Male	20 (13.2%)	70 (46.4%)	0.735
Female	15 (9.9%)	46 (30.5%)	
DM			
Yes	16 (10.6%)	55 (36.4%)	0.860
No	19 (12.6%)	61 (40.4%)	
Hypertension			
Yes	23 (15.2%)	82 (54.3%)	0.575
No	12 (7.9%)	34 (22.5%)	
Smoker			
Yes	13 (8.6%)	54 (35.8%)	0.326
No	22 (14.6%)	62 (41.1%)	
Positive family history			
Yes	7 (4.6%)	19 (12.6%)	0.619
No	28 (18.5%)	97 (64.2%)	

Stratification of age, gender, hypertension, diabetes mellitus, family history of nonobstructive CAD and smoking was done with respect to nonobstructive CAD as shown in table 3

DISCUSSION

As atherosclerotic plaque does not restrict blood flow, patients with Nonobstructive coronary artery disease (CAD) are less likely to manifest with angina [3,4]. Despite the fact that these lesions are not uncommon, they have been labelled as "insignificant" or "no significant CAD" in approximately 10% to 25% of patients who undergo coronary angiography. [5,6].

In our study, the mean age was 55.4±13.2 years while study conducted by Ilyas H, et al mean age was noted as 51.78±13.26 years[10]. In this study, the mean height was noted as 162.5±14.6 cm, mean weight was 65.4±10.4 kg and mean body mass index was 27.8±6.3 kg/m² similar results were seen in Larsen P, et al reported a BMI of 27.2±5.1 kg/m² while in an other study done by Petroni T, et al lower number was noted as BMI was 23.4 kg/m². In present study, out of 151 patients, 90 (59.6%) were male while 61 (40.4%) were female. Ilyas H, et al noted to have 55 (55%) males and 45 (45%) females. Worasuwanarak S, et al noted that 50.8% were males while 49.2% were females[2,11]. In current study, hypertension was noted in 105 (69.5%) patients. Xuechao W, et al noted hypertension in 16 (76%) patients. In recent study, diabetes mellitus was documented in 71 (47%) patients. The prevalence of diabetes in the study of Toluey M, et al was noted as 307 (42.8%)[12]. Lakhani MS, et al noted diabetes in 64 (45.1%) patients. Our study noted positive family history of nonobstructive CAD in 26 (17.2%) patients while negative family history of nonobstructive CAD was found in 125 (82.8%) patients[13]. Present study reported to have 67 (44.4%) smokers. similar results were also seen in the study of Jahic E, et al reported the prevalence of smokers as 297 (64.7%) while study by Larsen P, et al reported less prevalence of smokers as 28 (50%)[14,15]. This study also noted the prevalence of nonobstructive CAD as 35 (23.2%) patients. The study of Iqbal MN, et al reported history nonobstructive CAD in 95 (25.8%) cases. Another study reported to 88 have 17.6% cases of nonobstructive CAD. There were 125 (13.5%) patients of nonobstructive CAD reported in the findings of Ouellette ML, et al[16]. In recent study, stratification of confounders / effect modifiers with respect to nonobstructive CAD, significant difference was noted in age group (P=0.009), whereas insignificant difference was noted in gender (P=0.735), body mass index (P=0.217), hypertension (P=0.575), diabetes mellitus (P=0.860), family history of nonobstructive CAD (P=0.619) and smoking status (P=0.326).

CONCLUSION

It is to be concluded that nonobstructive coronary artery disease was documented in considerable number of patients admitted for elective coronary angiography. In future more research is needed to investigate all those factors that may be reason for higher risk of non obstructive coronary artery disease.

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