ORIGINAL ARTICLE

Significant Coronary Artery Disease in Patients Undergoing Valve Replacement Surgery

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ABSTRACT

Objective: To determine the frequency of angiographically significant coronary artery disease (CAD) in patients undergoing valve replacement surgery and referred for Coronary angiography.

Study Design: Cross Sectional Descriptive Study.

Study Setting& duration: From 14th February 2016 to 14th August 2016 in the Department of Cardiology, Tabba Heart Institute, Karachi.

Material and Methods: Total 127 patients of both genders with age 40-75 years undergone referred for coronary angiography and as a pre requisite of required valve replacement surgery were included and significant findings were noted. The history of comorbid, family history of premature CAD, smoking and basal metabolic index were noted.

Results: There were 58.3% male and 41.7% female patients. Average age was 54.60±8.91 years. Mean BMI was 28.64±4.62 Kg/m2. 75.6% patients were obese. Angiographically significant CAD was observed positive in 27.6% patients. Significant association was found with hypertension and premature family history of CAD. The prevalence was high in patients with MVR followed in patients with AVR.

Conclusion: The overall prevalence of angiographically significant coronary artery disease was 27.6%.in cases going through valve replacement is substantial. The prevalence was high in patients with MVR followed in patients with AVR.

Keywords: CAD, Angiography, Significant Coronary Artery Disease, Valve Replacement Surgery

INTRODUCTION

Valvular coronary illness is a filling issue especially in developing nations. Consider that range of valve infection in developing era is not quite the same as western as the dominating aetiology for valve substitution in our area of the planet is rheumatic valvular illness while degenerative valve sicknesses are at the highest point of rundown in the west. Rheumatic coronary illness is a significant medical problem in agricultural nations with a rate of more than 1 for each 1000.[1] In kids and youthful grown-ups it is the most normal type of valvular infection requiring surgery.[2] In one nearby review directed in Pakistan, the pervasiveness pace of echocardiographic rheumatic coronary illness was assessed to be 5.7/1000.[3]

ACC&AHA suggests that coronary angiography ought to be performed before valve medical procedure in men matured > 35 years, ladies matured > 35 years with coronary danger factors.[4] In developed era the predominance of coronary artery disease in cases going through valve substitution is 20-40%.[5] An Study observed that coronary artery disease was noted in upto 40% of cases gone through AVR, but this should be remembered that these are older cases with average age of 65±11 years.[6] CAD was viewed as in one third of cases going through catheterization before MVR.[7]

The motivation behind this review was to decide the significant CAD in cases going through valve replacement medical procedure in our populace to decide if they require corresponding A coronary artery bypass graft procedure or not. Coronary angiography before valve replacement surgery can be omitted in such patients so as to decrease the financial burden on patients in a developing country like Pakistan.

MATERIALS AND METHODS

Between 14th February 2016 & 14th August 2016 the descriptive Cross-Sectional Study was conducted at Department of Cardiology, Tabba Heart Institute, Karachi. Total 127 patients of both gender with age 40-75 years undergone referred for coronary angiography and as a pre requisite of required valve replacement surgery were included and significant findings were noted. All patients of either sex between 40-75 years of age requiring valve replacement surgery based on the recommendations in ACC/AHA guidelines[8]undergoing for coronary angiography before valve replacement were included. Patients with known coronary artery disease, prior valve surgery, Post-CABG or Post-PCI done previously were excluded from the study. History of comorbid as dyslipidaemia, hypertension, diabetes mellitus, family history of premature CAD, smoking and basal metabolic index were recorded. Descriptive statistics were calculated and stratification was done. Post stratification Chi-square test was applied, P-value <0.05 was considered as significant. All the information was noted and recorded on proforma designed for study, data collected and analyzed using SPSS version 22.

RESULTS

58.3% were male and 41.7% were female patients with average age of 54.60±8.91 years with range of 40-75 years [Table 1]. The average weight was 77.03±13.47 Kg &height was 164.17±10.17 cm. The BMI was calculated according to weight and Height, the mean BMI was 28.64±4.62 Kg/m^2 [Table 2] The results showed that among study subjects, 61.4% patients were diabetic, 70.1% were hypertensive, premature family history of CAD was positive in 27.6% patients, 55.1% were smokers, and dyslipidaemia was positive in 40.9% patients. Total 75.6% patients were obese. The mean BMI among obese patients was 31.18±0.85 Kg/m^2 and it was 20.76±1.63 Kg/m2 among non-obese patients. This should come above with BMI. As far as type of valve surgeries are concerned it was observed that 28.3% were AVR, 40.2% were MVR, and 31,5% were DVR. [Table 03] The frequency of significant CAD was also calculated & found in n=35 individuals, among them n=19 male n=16 female, <55 years n=17, >55 years n=18, n=23 diabetics, n=17 hypertensive, n=16 smoker, n=19 with dyslipidemia, n=25 was obese & n=16 with family history of CAD. [Table 01]

The final outcome i.e., angiographically significant CAD was observed positive in 27.6% patients. The frequency of significant CAD was also calculated according to type of valve surgery. The descriptive statistics of age and BMI was also evaluated according to significant of CAD. Stratification with respect to gender, age, diabetes mellitus, hypertension, premature family history of CAD, smoking, dyslipidemia, and obesity was done to observe association of these modifiers with angiographically significant CAD. The results showed that angiographically significant CAD is

significantly associated with hypertension (p=0.001) and premature family history of CAD (p=0.005). No significant association was observed with gender (p=0.575), age (p=0.488), diabetes mellitus (p=0.540), smoking (p=0.189), dyslipidemia (p=0.059), and obesity (p=0.501).

Table 1: Demographic information of the participants (n=127)

Variable	No.	%
Gender		
Male	74	58.3
Female	53	41.7
Age (years)		
≤ 55	68	53.5
> 5	59	46.5
Diabetes mellitus	78	61.4
Hypertension	89	70.1
Premature family history of CAD	35	27.6
Smokers	70	55.1
Dyslipidemia	52	40.9
Obesity	96	75.6
Significant CAD	35	27.6

Table 2: Descriptive statistics

Age (years)	54.60±8.91
≤ 55 years(n=68)	47.41±4.07
> 55 years (n=59)	62.88±4.78
Height (cm)	164.17±10.17
Weight (Kg)	77.03±13.47
BMI (Kg/m^2)	28.64±4.62
Obese (n=96)	31.18±0.85
Non-obese (n=31)	20.76±1.63

Table 3: Frequency distribution of type of valve surgery (n=127)

Type of surgery	No.	%
AVR	36	28.3
MVR	51	40.2
DVR	40	31.5%

DISCUSSION

Evaluation of coronary artery disease before valve substitution is significant in cases who satisfy ACC/AHA measures to decide need of accompanying careful revascularization. In past Data the frequency of angiographically demonstrated CAD in obtained valvular illnesses has been displayed to change generally, from 9-41%.[9] The CAD was accounted for to be just about as high as 37% in aortic stenosis.[10] Angina was reported in 36.6% cases among 387 cases with valvular coronary illness in prospective study assessing CAD& angina.[11] CADwas observed in one third of cases going through catheterization before MRV.[7]

Considering the general commonness of rheumatic coronary illness in our populace distinguish presence of significant CAD in this subgroup of cases. Be that as it may, the information in regards to the conjunction of CAD in cases with rheumatic valvular illness is restricted. In study by Marchant al[12] regarding the coronary angiographic after effects of one hundred cases with rheumatic valvular illness and he revealed the commonness of CAD with more than half stenosis to be 14% in the studied populace. Considering the general pervasiveness of rheumatic coronary illness in our populace recognize presence of significant CAD. Anyway, the data in regards to the conjunction of CAD in cases with rheumatic valvular disease is restricted.

In review literature regarding prevalence of CAD was reported by Shaikh et al[13] [25%], Manjunath et al[14] [8.7%], Cazelli et al[15] [20%] & Matta[16] [27.75%]. Kruczan et al[17] compared rheumatic with non-rheumatic valvular cardiac disease and reported lower prevalence of CAD 4% in rheumatic group as compare to non-rheumatic valvular heart disease group, which was about 33.61%. Shaikh[13] noticed 23% prevalence of coronary artery disease in cases going through mitral valve replacement, while in

case of aortic valve 32.3% and for dual valve the data documented as 21.7%, while we observed in our study as 28.3% were AVR, 40.2% were MVR, and 31,5% were DVR.

CONCLUSION

The overall prevalence of significant coronary artery disease was 27.6%. it was high in patients with mitral valve replacement followed by aortic valve replacement. Significant CAD was low under 55 years. The prevalence was significant in cases who had a premature family history of coronary artery disease and hypertension.

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