



CORONARY ARTERY DISEASE IN PATIENTS WITH RHEUMATIC HEART DISEASE –AN ANGIOGRAPHIC STUDY

Cardiology

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ABSTRACT

Objective: The aims of the study was to find the prevalence of CAD in RHD patients undergoing preoperative coronary angiogram and its distribution in various valvular lesions

Materials and Methods: RHD patients who underwent CAG before surgery from 2017-2018 were evaluated. Patients of RHD with significant CAD ($\geq 50\%$ stenosis) were studied. Patients with acute coronary artery syndrome due to emboli were excluded.

Results: There were 101 RHD patients who underwent preoperative CAG from 2017-2018. Mean age of the population was 46.7 years. Majority of the patients had normal epicardial coronaries on CAG. Among these 101 RHD patients, 23 (22%) patients had significant coronary artery disease (males-14, females – 9). Single vessel disease in 15 patients (males-8, females-7), double vessel disease in 3 patients, left main with double vessel disease in 2 patients, triple vessel disease in 2 patients, anomalous coronary artery was found in one patient (right coronary artery). Predominant aortic stenosis and multivalvular disease had majority of coronary artery disease.

Conclusion: The prevalence of CAD in patients with RHD is similar to other studies. Males had more CAD compared to females. Single-vessel involvement is more common among these patients. Predominant aortic stenosis and multivalvular disease had majority of coronary artery disease. It is indicated to undergo preoperative CAG before valve surgery when age is more than 40 years.

KEYWORDS

INTRODUCTION:

In developing Countries, rheumatic heart disease (RHD) is a major health problem with significant mortality and morbidity. The prevalence of RHD in patients with coronary artery disease in both clinical and autopsy studies is less^{[1],[2],[3]}. In few studies, frequent association of RHD was seen with the occurrence of coronary artery disease (CAD) with poor prognosis^{[4],[5],[6]}. The American College of Cardiology/the American Heart Association recommends routine pre-operative coronary angiography (CAG) in patients with valvular heart disease before valve surgery in men aged ≥ 35 years, in pre-menopausal women aged ≥ 35 years who have coronary risk factors and in post-menopausal women^[7]. Hence, coronary angiogram is usually performed if there is suspicion of CAD or compulsory if it is performed after age > 40 years before valvular heart surgeries. Many studies have been done to observe the prevalence of CAD and association of the risk factors with CAD in RHD patients^{[8],[20]}. The present study was done to find association and prevalence of CAD in RHD patients and its distribution in various valvular diseases.

MATERIALS AND METHODS:

The study was a cross-sectional observational study. 101 RHD patients who underwent preop CAG included, where patients gave consent to the inclusion into data analysis. Stenosis $\geq 50\%$ by quantitative CAG was taken as significant. CAD was studied in different valvular lesions. Acute coronary syndrome due to embolic phenomenon was excluded. CAG was performed via a femoral or radial approach. The degree of coronary artery stenosis was estimated in at least two orthogonal views. Multivessel disease was defined as the presence of clinically significant stenosis in two or more vessels.

RESULTS:

Among 3000 patients from 2017 to 2018, there were 101 RHD patients who underwent preoperative CAG. There were 59 males and 42 females. Mean age of the population was 46.7 years. There was 21 cases of isolated mitral stenosis and among them 13 were males and 8 were female, combined mitral stenosis with mitral regurgitation were 22 (males -9, females -13), multivalvular heart disease involving both mitral and aortic valve who underwent double valve replacement were 16 (males-9 females -7), predominant aortic stenosis with insignificant mitral involvement was 3 (males-2, females-1), predominant aortic regurgitation with insignificant mitral involvement was 2 (male-1, female-1). There were four diabetic patients (males-2, females-2).

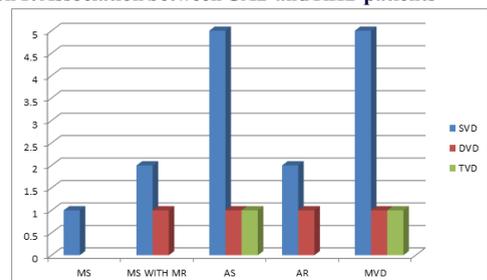
Majority of the patients had normal epicardial coronaries on CAG. Among these 101 RHD patients, 23 (22%) patients had significant coronary artery disease (males-14, females – 9). Single vessel disease

in 15 patients (males-8, females-7), double vessel disease in 3 patients, left main with double vessel disease in 2 patients, triple vessel disease in 2 patients, anomalous coronary artery was found in one patient (right coronary artery). Predominant aortic stenosis and multivalvular disease had majority of coronary artery disease as shown in table 1 and graph 1.

Table 1: Association between CAD and RHD patients

	Single vessel disease	Double vessel disease	Triple vessel disease
Mitral stenosis	1	-	-
Combined mitral stenosis with mitral regurgitation	2	1	-
Predominant aortic stenosis	5	1	1
Predominant aortic regurgitation	2	1	
Multivalvular disease	5	1	1

Graph 1: Association between CAD and RHD patients



DISCUSSION:

The mean age of RHD patients who had CAD was 46.7 years as compared to other studies^[10, 17-19], which was around 50–60 years. The prevalence of CAD was found between 7% and 12% in other Indian studies^{[17],[18],[19]}. This study showed prevalence of 22%. The male to female ratio in this study was 2.5:1 when compared with other studies, which showed ratio between 1.6:1 and 2.6:1^{[9],[19]}. Hence, it is indicated to advise CAG in patients of RHD planned for surgery who are above 40 years of age. SVD was the common lesion in this study.

Majority of the cases had involvement of mitral valve as shown by another study by Shaikh et al^[15]. This can be explained because of high prevalence of mitral valve disease in RHD patients. This study showed

increased association of CAD in aortic stenosis and multivalvular lesion. Strong association of stenotic lesions with CAD has been found in various studies^{[9],[19]}. This may be attributed to more prolonged and ongoing inflammatory process responsible for stenotic lesion leading to microvascular changes and endothelial dysfunction. Less CAD in regurgitation lesions may be due to larger vessels seen in these lesions. However, still, more studies are needed in this aspect.

CONCLUSION:

CAG should be performed in patients >40 years of age who are undergoing for valvular surgery as there is high prevalence of CAD and can be associated with increased operative complications. Single-vessel involvement is the common lesion found in these patients. CAD in these patients may be due to inflammatory response associated with RHD.

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