



ANGIOGRAPHIC PROFILE OF CORONARY ARTERY DISEASE IN WOMEN UNDERGOING CORONARY ANGIOGRAPHY IN A TERTIARY CARE HOSPITAL

Cardiology

Barani Velan S*	Resident, Institute Of Cardiology, Madras Medical College, Chennai *Corresponding Author
Tamilselvan K	Assistant Professor, Institute Of Cardiology, Madras Medical College, Chennai
Swaminathan N	Professor, Institute Of Cardiology, Madras Medical College, Chennai

ABSTRACT

BACKGROUND: Cardiovascular disease still remains the leading cause of death in women. The clinical and angiographic profiles of women undergoing CAG must be clearly understood. However there is not much data regarding the angiographic pattern of CAD in women undergoing CAG.

AIM: Our aim was to study the angiographic pattern of coronary artery disease in women undergoing coronary angiogram in our institute.

METHODS: The records of 275 consecutive female patients who underwent CAG in our institute from December 2017 to May 2018 were retrospectively analysed. The clinical and angiographic data were taken for detailed analysis from CAG reports and discharge summaries. Baseline characteristics of patients were noted. Angiographic pattern was analysed. All statistical analysis was performed using SPSS17 software. A p-value <0.05 was considered statistically significant.

RESULTS: In our study group, LAD was the most commonly involved vessel, followed by RCA and LCX respectively. 26.91% had normal epicardial coronaries. 9.82% had minimal CAD. 28% had SVD; 16.36% had DVD; 15.63% had TVD; 21.8% had branch vessel disease. In our study, 7.63% had LMD. 1.82% had coronary artery anomalies in the form of abnormal origin. In our study, the prevalence of multi vessel disease (DVD and TVD) is 32% among women undergoing CAG.

CONCLUSION: There is a significant increase in the number of women diagnosed to have CAD. Understanding the angiographic pattern of CAD in women will give further insight towards aggressive coronary interventions in women.

KEYWORDS

coronary angiogram, coronary artery disease, women, left main disease

INTRODUCTION

Cardiovascular disease still remains the leading cause of death in women. Women with acute coronary syndrome (ACS) are more likely than men to have normal coronary angiograms (CAG) or demonstrate no obstructive coronary artery disease (CAD). Women have less anatomic obstructive CAD and relatively more preserved left ventricular function despite higher rates of myocardial ischemia and mortality compared with men [1]. There has been a phenomenal increase in the number of women undergoing coronary angiogram across the globe over the last few years. The causes for this paradigm shift could be multifactorial.

The magnitude of problem imposed by left main disease (LMD), though well established in men, has not been explored in women. The clinical and angiographic profiles of women undergoing CAG must be clearly understood. Coronary intervention strategies depend on the pattern of CAD. However there is not much data regarding the angiographic pattern of CAD in women undergoing CAG. Hence, a study about the angiographic pattern of CAD in women will enable better understanding for performing percutaneous coronary intervention and producing better results. We wanted to know about the angiographic pattern of CAD in women admitted for CAG in a tertiary care hospital.

AIM

Our aim was to study the angiographic pattern of coronary artery disease in women undergoing coronary angiogram in our institute.

MATERIALS AND METHODS

The records of 275 consecutive female patients who underwent CAG in our institute from December 2017 to May 2018 were retrospectively analysed. The clinical and angiographic data were taken for detailed analysis from CAG reports and discharge summaries. Baseline characteristics of patients were noted. The dominance of coronary system was studied and classified as right, left or co-dominant system. Coronary artery anomalies with regard to origin and branching pattern were noted. In our study, stenosis in vessels other than left main was defined as minimal if the narrowing was less than 50%, moderate between 50% and 70%, and severe or significant for a diameter reduction of 70% or more. LMD was classified as minimal if stenosis was less than 30%, intermediate for stenosis between 30% and 50% and significant for stenosis more than 50%. Depending on the number of major epicardial coronary arteries involved, they were classified as

single vessel disease (SVD), double vessel disease (DVD), triple vessel disease (TVD) and Branch vessel disease (BVD). Angiographic pattern was analysed. All statistical analysis was performed using SPSS17 software. A p-value <0.05 was considered statistically significant.

RESULTS

Our study group had 275 patients. The age of patients ranged between 27 and 78 years. The average age of all patients was 54.33 years. Among the 275 patients, 217 underwent CAG through femoral route and 57 underwent CAG through radial route. One patient in whom radial access was difficult had undergone the procedure through brachial route.

Among the 275 patients, 46 patients (16.72%) had stable ischemic heart disease (SIHD); 64 patients (23.07%) who had ST elevation myocardial infarction (STEMI) had been thrombolysed with either streptokinase or tenecteplase; 58 patients (21.09%) who had STEMI were not thrombolysed due to late presentation; 78 patients (28.36%) presented with non ST elevation acute coronary syndrome (NSTEMI-ACS) and 29 other patients (10.54%) underwent CAG prior to valve surgery [Fig.1].

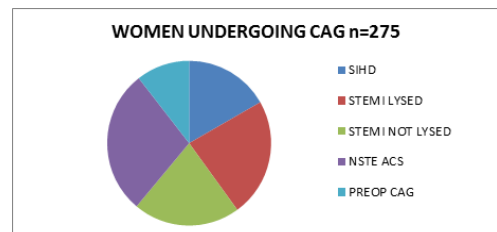


FIG.1

Among the 122 STEMI patients, 68 patients had anterior wall myocardial infarction (AWMI); 50 patients had inferior wall myocardial infarction (IWMI); 15 patients had right ventricular myocardial infarction (RVMI) along with IWMI; 14 patients had posterior wall myocardial infarction (PWMI) along with IWMI; 2 patients had high lateral myocardial infarction (HLMi); 2 patients had ventricular septal rupture; 11 had mitral regurgitation.

In total, 130 patients were diabetic, 131 patients were hypertensive,

155 patients had normal left ventricular (LV) function, 54 patients had mild LV systolic dysfunction, 63 patients had moderate LV systolic dysfunction, 3 patients had severe LV systolic dysfunction, 8 patients were hypothyroid, 7 patients were positive for inducible ischemia in treadmill test (TMT), 3 patients were in atrial fibrillation, 5 patients had complete heart block, 6 patients had left bundle branch block (LBBB), 3 patients had qRBBB (right bundle branch block).

Among the 275 patients, 216 patients (78.55%) had right dominant system, 34 patients (12.36%) had left dominant system and 25 patients had co-dominant system (9.09%) of coronaries. [Fig.2] Left main coronary artery (LMCA) bifurcated into left anterior descending artery (LAD) and left circumflex artery (LCX) in 246 patients (89.45%), trifurcated into ramus, LAD and LCX in 28 patients (10.18%) and 1 patient had separate origin of LAD and LCX from left coronary sinus. 2 patients had long LMCA and 8 had short LMCA. Right coronary artery (RCA) had its origin abnormally from left coronary sinus in 2 patients and 2 patients had double RCA. 2 patients had myocardial bridging in LAD.

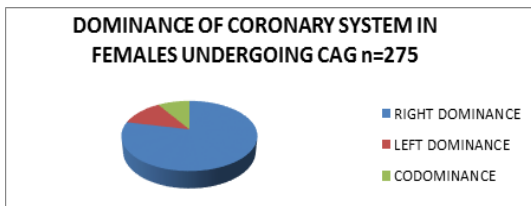


FIG.2

Among the 275 patients, 74 had normal epicardial coronaries and the rest 201 patients had some form of disease in one or more coronary arteries. 27 patients had minimal CAD. 30 patients had left main disease (LMD). Among the LMD, 9 patients had mild disease (<30% stenosis), 15 patients had intermediate lesion (30-50% stenosis) and 6 patients had significant LMD (>50% stenosis). 77 patients had single vessel disease (SVD), 45 patients had double vessel disease (DVD), 43 patients had triple vessel disease (TVD) and 60 patients had branch vessel disease (BVD) [FIG.3]

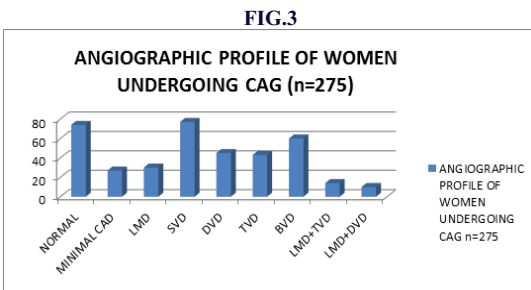


FIG.3

Among the 275 patients, 174 had some form of LAD disease with significant stenosis more than 70% noted in 101 patients. When compared with proximal LAD, mid LAD had more significant stenosis. 51 patients had significant LCX stenosis out of the total 88 diseased LCX with distal LCX contributing more than proximal LCX. [fig.4] Among the 109 diseased RCA patients, both proximal and mid RCA had almost equal contribution. Results of all vessels individually is tabulated in Table.1 When significant stenosis (>70%) was considered, 27 patients had OM disease; 22 had diagonal disease; 8 had PDA disease; 2 had PLB disease. Among the 29 women who underwent CAG prior to valve surgery, 1 patient had SVD, 2 patients had minimal CAD and 1 patient had DVD and BVD.

FIG.4

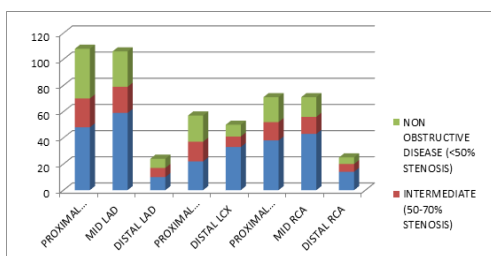


TABLE.1 ANGIOGRAPHIC PROFILE: INVOLMENT AMONG MAJOR EPICARDIAL CORONARIES.

(N=275)NUMBER OF PATIENTS WITH	PROXIMAL LAD	MID LAD	DISTAL LAD	PROXIMAL LCX	DISTAL LCX	PROXIMAL RCA	MID RCA	DISTAL RCA	RAMUS
SIGNIFICANT (>70% STENOSIS)	48	59	10	22	33	38	43	19	1
INTERMEDIATE (50-70% STENOSIS)	22	20	7	15	8	14	13	15	5
NON OBSTRUCTIVE (<50% STENOSIS)	38	27	7	20	9	19	15	3	6

DISCUSSION

Previous works showed that among women who undergo CAG the angiographically determined prevalence of SVD is 5.77%, DVD is 3.15%, and TVD is 2.8% respectively [2,3]. With more than two risk factors, significant CAD is seen in 21% of women [4]. Study done by Dave et al among Indian women undergoing coronary angiography showed greater proportion of TVD (39.6%) than DVD (12.9%) or SVD (15.8%) [5]. Similar studies have been done in young women [6,7] and premenopausal women [8] and reported in literature.

In our study group, LAD was the most commonly involved vessel, followed by RCA and LCX respectively. 26.91% had normal epicardial coronaries. 9.82% had minimal CAD. 28% had SVD; 16.36% had DVD; 15.63% had TVD; 21.8% had branch vessel disease. Various studies have reported different prevalence of LMD. The prevalence of LMD among women with probable angina and non-specific chest pain is <5% and <1% respectively, and this is less than that in men [3]. In our study, 7.63% had LMD. 1.82% had coronary artery anomalies in the form of abnormal origin. In our study, the prevalence of multi vessel disease (DVD and TVD) is 32% among women undergoing CAG.

LIMITATIONS OF THE STUDY

Intracoronary imaging modalities were not used in our study. Hence we were not able to analyse the significance of intermediate lesions.

CONCLUSION

There is a significant increase in the number of women angiographically diagnosed to have CAD. It is important to identify atherosclerotic risk factors in women and manage them more aggressively to prevent future cardiovascular events. Understanding the angiographic pattern of CAD in women will give further insight towards aggressive coronary interventions in women.

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