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Angiographic Profile and Outcomes in Treadmill Test Positive Patients in Tertiary Care Centre: Retrospecite Study

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Abstract

Background: Coronary artery disease (CAD) is a leading cause of morbidity and mortality in human beings. The aim of the present study was to analyze the coronary artery disease profile using coronary angiography in positive treadmill test patients

Methods: A total of 40 consecutive patients for coronary angiogram were studied at Department of Cardiology, MGM Medical College and Hospital Kamothe, Navi Mumbai. The patients were subjected to CAG and TMT. Data were analyzed by using SPSS 25.0 software.

Results: Among the 40 patients under assessment, double vessel disease (DVD) was the most common (27.50%) followed by 25.00% of single vessel disease (SVD) and 10.00% of triple-vessel disease (TVD). Left anterior descending (LAD) artery disease was seen in 57.50% followed by right coronary artery (RCA) 25.00%, left main coronary artery (LMCA) in 25.00% and left circumflex artery (LCx) 22.50%.

Conclusion: It is concluded that, the findings of the present study effectively demonstrated higher predictive value of TMT in women with chest pain suggestive of CAD.

Keywords: Coronary Angiography, Treadmill Test (TMT), Coronary artery disease (CAD)

Introduction

Coronary artery disease (CAD) is a leading cause of morbidity and mortality in human beings. The Global Burden of Disease Study reported that the disability-adjusted life year lost by CAD in India during 1990 was 5.6 million in men and 4.5 million in women; the projected figures for 2020 were 14.4 million and 7.7 million in men and women, respectively.[1-2] The annual CVD mortality rate has remained greater for women than for men. There are important sex differences in the pathophysiology, clinical presentation, and clinical outcomes of CAD in women. Women's health involves two aspects Sex differences resulting from biological factors and gender differences affected by broader social, environmental, and community factors.[3]

When symptoms are atypical or non-specific, TMT in women has a relatively low analytical tools yield for CAD compared with men. Therefore, there was need of angiographic prevalence and pattern of CAD in women. The earlier researcher reported that 70% of sensitivity and 61% of specificity of TMT for detection of CAD in women.[4] Stenosis of the left main coronary artery (LMCA) is a comparatively rare but significant cause of augmented morbidity and mortality among patients with CAD. Left anterior descending (LAD) is the most commonly affected vessel, followed by LCX and RCA, and LMCA was the least involved vessel [5].

During exercise, catecholamine was released predominantly in women, which could potentiate coronary vasospasm and enhance the frequency of abnormal exercise. False positive results have been represented commonly during menses and pre-ovulation. The previous finding from a meta-analysis elucidated that a specificity of 70% suggests false positivity of approximately 30% in TMT positive patients.[6]

Coronary angiography is used to establish the presence or absence of coronary artery stenosis due to CAD. This provides the most reliable anatomical information for definite therapeutic options

Material and Method

Type of study: Hospital based prospective study

Study place: Department of Cardiology, MGM Medical College and Hospital Kamothe, Navi Mumbai.

Sample Size: Total-40 treadmill test positive patients

Inclusion Criteria

1. Age >18 year.
2. Patient presenting with stable angina.
3. Not a kown case of CAD/prior PCI or CABG.
4. Treadmill test positive patient.

Exclusion Criteria

1. Age <18 year
2. Patient presenting heart failure.
3. Patient with acute coronary syndrome

Data collection

This study was conducted on patients who have stable anginal symptoms for Treadmill Test positive and coronary angiogram at Department of Cardiology, MGM Medical College and Hospital Kamothe, Navi Mumbai.

In this study, we was included patients with chest pain were at least 30 years of age, who had a history of either diabetes mellitus and/or hypertension. Patients were excluded if they had pervious coronary artery bypass graft, PTCA and valvular heart disease. Detailed history of patients was recorded on basis of nature of chest pain. Pulse, blood pressure and JVP (jugular venous pressure) examination was done. Anemia, jaundice, Cyanosis, Pedal edema, approximate fat and palpable heart sounds or murmurs were examined.

The Bruce protocol was used for stress testing. In resting 12 lead ECG was performed. and each lead placed on the body records the electrical activity of the heart. There are three leads that are connected to the Treadmill monitor. During the stress test, the patient's blood pressure was recorded at the second minute in every stage.

Written informed consent was obtained from all patients before enrolment.

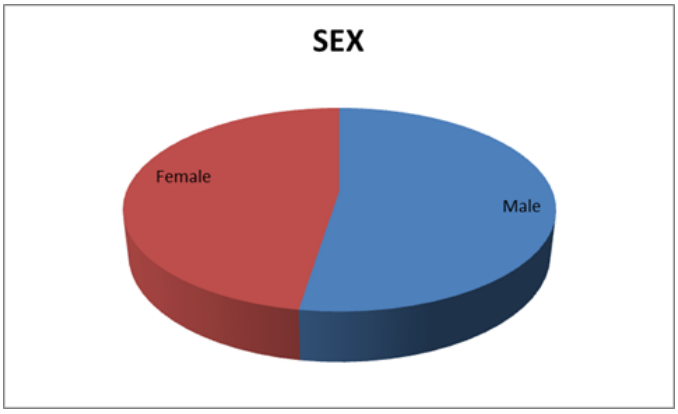
Results

Table 1: Demographic profile

Age in years	49.81±6.02 years
Male : Female	21 : 19 (1.11:1)

In present study, mean age of patients was 49.81±6.02 years. Maximum patients were belong to 40-60 years age groups.

Graph 1:



Graph 2:

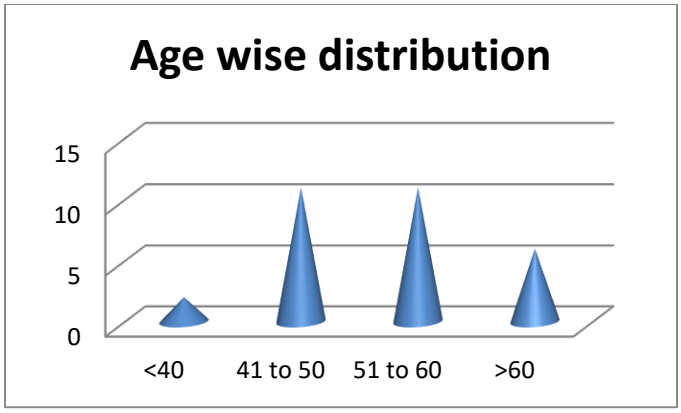


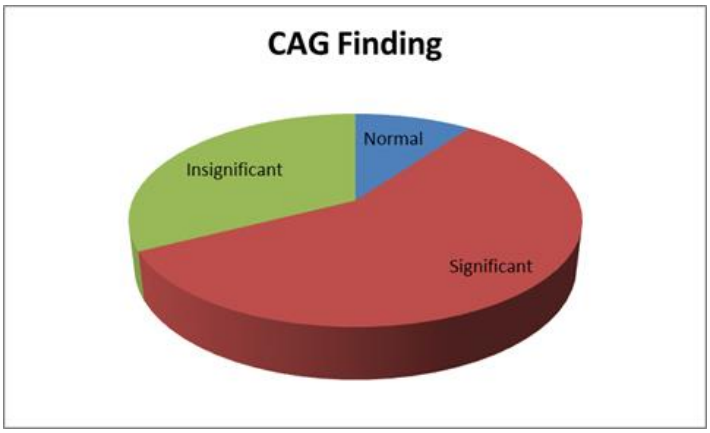
Table 2: Clinical profile

Clinical presentation	Chest pain	33 (82.50%)
	Breathlessness	34 (85.00%)
Risk factor	Hypertension	19 (47.50%)

	Diabetes	10 (25.00%)
	Dyslipidaemia	11 (27.50%)
	Smoking	2 (5.00%)

In present study, 85.00% patients were present with breathlessness and 82.50% patients were present with chest pain. 47.50% patients were present with Hypertension followed by Dyslipidaemia (27.50%), Diabetes (25.00%) and smoking (5.00%).

Graph 3:



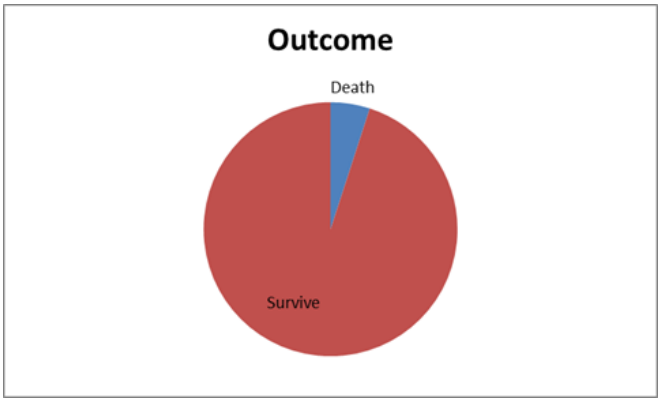
In present study 23 patients were present with significant CAG finding followed by 13 patients present with insignificant finding and 4 patients were normal.

Table 3: Coronary Angiography Profile in TMT Positive

Lesion location	LAD	23 (57.50%)
	LCX	9 (22.50%)
	LMCA	10 (25.00%)
	RCA	10 (25.00%)
Number of diseases vessels	Single vessel disease	10 (25.00%)
	Double vessel disease	11 (27.50%)
	Triple vessel disease	04 (10.00%)

Among the 40 patients under assessment, double vessel disease (DVD) was the most common (27.50%) followed by 25.00% of single vessel disease (SVD) and 10.00% of triple-vessel disease (TVD). Left anterior descending (LAD) artery disease was seen in 57.50% followed by right coronary artery (RCA) 25.00%, left main coronary artery (LMCA) in 25.00% and left circumflex artery (LCx) 22.50%.

Graph 4:



Out of 40 patients, 2(5.00%) patients were died.

Discussion

The risk of morbidity and mortality from coronary artery disease increased rapidly among men and women. Even though significant research efforts have advanced diagnosis and treatment strategies for patients at risk, but the detection of CAD in women can be challenging.

In Present study mean age of patients was 49.81±6.02 years. Maximum patients were belonging to 40-60 years age groups and the reason for this is the onset of risk factors for CAD at younger and middle age. The complexity of diseases condition like diabetes mellitus and hypertension or presence of both varies between different age groups. Modifications of dietary habit and lifestyle improve the incidence of CAD patients.

The TMT was performed using treadmill bicycle exercise with ECG, blood pressure and heart rate monitoring. Contraindications for TMT are symptomatic heart failure, acute myocardial infarction, symptomatic aortic stenosis, acute arrhythmia, accelerated hypertension (Blood pressure > 200/110), aortic dissection, and AV blocks. The diagnostic accuracy of exercise testing varies depending on the age, clinical characteristics of the patient and modality of test used.[7]

The meta-analyses data in the published literature elucidated the analytical accuracy of stress testing for the presence of obstructive CAD, identified as 50% diameter or more stenosis by quantitative coronary angiography (QCA).[8-10] Exercise stress test has been represented to have a sensitivity of 61% and specificity of 69% for the detection of CAD in women.

Conclusion

In the present study, there is strong correlations between positive exercise treadmill test and coronary angiographic profile. Further research is needed to ascertain the effectiveness of schedule screening for asymptomatic CAD and chest pain in a different patient subgroup.

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