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ANGIOGRAPHIC PROFILE IN TMT POSITIVE WOMEN PRESENTING WITH CHEST PAIN

Cardiology

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ABSTRACT

BACKGROUND: Coronary Artery Disease is one of the leading cause of mortality and morbidity worldwide. Globally, there has been a significant rise in the proportion of women suffer from CAD over the last few decades. Exercise stress testing is the cheapest & easily available investigation for evaluating myocardial ischemia but has a relatively low sensitivity & specificity. TMT has less prognostic value in females when symptoms are atypical. The aim of this study is to analyze the angiographic profile in TMT positive women presenting with chest pain.

MATERIALS & METHODS: A total of 154 female patients underwent TMT test, of which 100 were TMT positive over a period of 1 year from July 2017 - June 2018. 100 TMT Positive women underwent coronary angiogram in the Institute of Cardiology, Madras medical college, Rajiv Gandhi Government General Hospital, Chennai.

RESULTS: Of the 100 TMT positive female patients who underwent coronary angiogram, 59% had coronary artery disease and 41% patients had normal coronaries. 24% had single vessel disease, 5% had double vessel disease and 15% had triple vessel disease and 15% had minimal CAD. 88% of elderly women (≥61years) had lesion in coronary angiogram.

CONCLUSION: TMT has a high positive predictive value of Coronary Artery Disease especially in elderly female patients.

KEYWORDS

TMT, Coronary Artery Disease, Coronary Angiogram.

INTRODUCTION

CAD is one of the leading causes of mortality and morbidity[1,2]. TMT remains a cost effective, easily available & widely applicable approach for early diagnosis of CAD[3,4]. TMT in women have a relatively low diagnostic yield for CAD compared with men, especially when symptoms are atypical or non-specific[5,6,7]. TMT has been reported to have sensitivity of 70% and specificity of 61% for detection of CAD in women[5,6,7].

MATERIALS AND METHODS

This is a prospective observational study done in the Institute of Cardiology, Madras medical college, Rajiv Gandhi Government General Hospital, Chennai over a period of 1 year from July 2017 - June 2018. All the female patients >18 years presenting with chest pain & TMT positive were included in the study. Using the standard Bruce protocol[8,9] a 12-lead ECG was recorded before exercise, at the end of each exercise stage, at peak exercise and at 2-min intervals during recovery. Three standard ECG leads were continuously monitored during exercise. The test was discontinued for limiting symptoms (angina, dyspnea, fatigue), abnormalities of rhythm or blood pressure, or marked and progressive ST segment deviation (>0.2 mV in the presence of typical angina or in the first stage of exercise). The ECG criterion for a positive test was 1 mm or more of exercise-induced ST segment deviation at 0.06 after the J point, relative to the PR segment. Female patients presenting with acute coronary syndrome, TMT negative and <18 years of age were excluded from the study. A total of 154 female patients underwent TMT test, of which 100 were TMT positive. 100 TMT Positive women underwent coronary angiogram and the prevalence of CAD was analysed. Data were analyzed by using SPSS 20.0 software.

RESULTS

The baseline characteristics of the TMT positive females are depicted in table 1.

Table 1: Baseline characteristics of TMT positive females

Variable	N=100
Age in years 31-40	11(11%)
41-50 years	37(37%)
51-60 years	43(43%)
61 years	9(9%)
DM	28(28%)
HT	20(20%)
DM + HT	15 (15%)

Of the 100 TMT positive female patients who underwent coronary angiogram, 59% had coronary artery disease and 41% patients had normal coronaries. 24% had single vessel disease, 5% had double vessel disease and 15% had triple vessel disease and 15% had minimal CAD (fig 1).

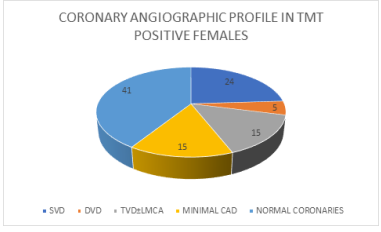

Figure 1: Coronary angiographic profile in TMT positive females

Of 11 patients in age group 31-40, 3 patients had lesion in CAG, in the age group 41-50 years, 21 out of 37 patients had lesion in CAG (p=0.12), 51-60 years age group, 27 out of 43 patients had lesion in CAG(p=0.5) and ≥ 61 years age group 8 out of 9 patients had lesion in CAG (p=0.05) (figure 2).

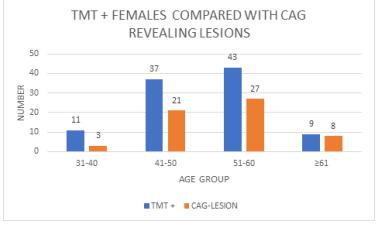

Figure 2: TMT positive females in different age group with coronary artery disease in CAG

34 patients revealed LAD lesion, 24 patients revealed lesion in RCA ,20 patients revealed lesion in LCX and 6 patients revealed lesion in LMCA (figure 3).

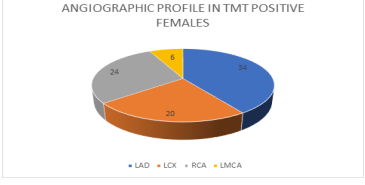

Figure 3: Angiographic profile in TMT positive females

Of 28 diabetic patients, 13 had lesion, 10 out of 20 Hypertensive patients had coronary artery disease on coronary angiogram and 10 out of 15 patients having both DM and HT had coronary artery disease (figure 4).

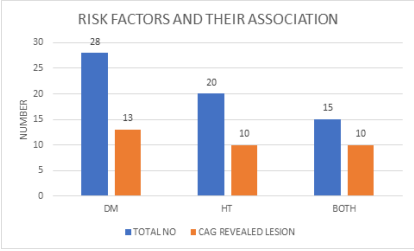

Figure 4: Risk factors and their association

DISCUSSION

Women in our study were classified according to different ages from 30 years to >60 years. There has been a varying trend in the number of young and middle-aged women (41 to 60 years) undergoing coronary angiography and the reason for this is the onset of risk factors for CAD at younger and middle age. Elderly females had a highest percentage of Coronary artery disease in TMT positive group in our study, followed by 51-60 age group, followed by 41-50 and least in the age group 31-40 years. Below 40 years, females have less incidence of coronary artery disease due to protective effect of estrogen hormone. The complexity of diseases condition like diabetes mellitus and hypertension or presence of both varies between different age groups and their presence increases the chances of coronary artery disease. Correlation between diabetes and CAD have been reported a positive relationship in numerous current studies[10,11]. Our study revealed a positive correlation between CAD and risk factors like DM and HT.

For early diagnosis of CAD exercise stress test still remains a cost effective, non-invasive and widely available test, but has a relatively low sensitivity (70%) & specificity (61%). TMT is a cardiovascular stress test using treadmill exercise with ECG, blood pressure and heart rate monitoring. The treadmill is stopped when the patient achieves a target heart rate (85% of the maximum predicted for the patient's age). Contraindications for TMT are acute arrhythmia, symptomatic aortic stenosis, acute myocardial infarction, symptomatic heart failure, accelerated hypertension (BP >200/110) aortic dissection and AV blocks.

The positive predictive value in our test was 59%.

CONCLUSION

TMT has a good predictive value for detecting CAD in female patients and very high in elderly females. Diabetes mellitus and HT increases the incidence of coronary artery disease in TMT positive patients.

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