



## A STUDY OF ASSESSMENT OF RISK IN MALE PATIENTS WITH ACUTE CORONARY SYNDROME- A CROSS SECTIONAL STUDY.

**Dr. Prasad Potdukhe**

Associate Professor in the Department of General Medicine, GMC, Chandrapur.

**Dr. Pranay Gandhi\***

Assistant Professor in the Department of Community Medicine, GMC, Chandrapur.  
\*Corresponding Author

### ABSTRACT

There has been an association between erectile dysfunction and coronary artery disease and hence this study was to find out if ED could predict the presence of LM/3VD in ACS patients.

**Materials and methods:** A total of 100 male patients with ACS in the department of general medicine from 1<sup>st</sup> January 2017 to 31<sup>st</sup> march 2017 were included in the study. Clinical assessment, estimation of international index of erectile function (IIEF) score, and coronary angiography were performed in all patients.

**Results:** Out of the total 100 male patients patients with IIEF score <17 had significantly higher prevalence of LM CAD (6.2% versus 21.4%,  $p = 0.01$ ), 3VD (18% versus 42.5%,  $p = 0.01$ ) and LM/3VD (20.2% versus 59.3%,  $p = 0.001$ ). The independent predictors of LM/3VD in order of significance were: age, heart rate, IIEF <17, Killip class >1, and ST-depression or ST-elevation in lead aVR  $\geq 1$  mV.

**Conclusion:** The presence of moderate or severe ED in men with ACS is associated with more incidence of LM/3VD. IIEF score <17 was an independent predictor of LM/3VD.

### KEYWORDS : ACS

#### INTRODUCTION-

Due to the changing lifestyles there has been an epidemiological transition with the noncommunicable diseases like coronary artery diseases being now a leading cause of morbidity and death all around the world. In patients with non-ST-segment elevation acute coronary syndrome (ACS), the presence of left main and/or three-vessel disease (LM/3VD) carries an outstanding higher risk of adverse cardiovascular events.<sup>1,2</sup>

Erectile dysfunction (ED) is defined as the inability to achieve and/or to maintain erection that is necessary for satisfactory sexual intercourse.<sup>3</sup> apart from being psychological erectile dysfunction, the pathophysiological mechanism and risk factors of developing ED are quite similar to those of CAD with endothelial dysfunction as the major component affecting different vascular beds of various diameters.<sup>4</sup> The relation between ED and cardiovascular diseases was previously noticed. ED was found to be associated with subclinical left ventricular dysfunction,<sup>5</sup> increased incidence of asymptomatic CAD,<sup>6</sup> increased risk for CAD morbidity and mortality.<sup>7</sup> The severity of ED was also found to be correlated with angiographic extent of CAD.<sup>8</sup> Early invasive strategy with revascularization is particularly indicated in ACS patients with LM/3VD to improve their outcome.<sup>9</sup> Hence, early diagnosis of such patients upon presentation appears to be of an utmost benefit. Hence the aim of this study was to find out if the severity of ED could predict the presence of LM/3VD in ACS patients.

#### MATERIAL AND METHODS-

This was a hospital based study conducted in the department of general medicine from 1<sup>st</sup> January 2017 to 31<sup>st</sup> march 2017 and included 100 male patients with non-ST-segment elevation ACS who were admitted in the medicine ward. The diagnosis of ACS was made according to the 2014 AHA/ACC guideline for the management of patients with non-ST-elevation ACS.<sup>10</sup>

International index of erectile function (IIEF) score estimation: After stabilization of the clinical condition, all patients were evaluated using the IIEF 15-item, self-administered questionnaire,<sup>11</sup>

According to the results of IIEF questionnaire, patients were divided into two groups:

Group 1: patients with mild or no ED (IIEF score  $\geq 17$ ). This group included 50 patients.

Group 2: patients with moderate or severe ED (IIEF score <17).<sup>12</sup> This group included 50 patients.. Correlations between different variables were investigated by Pearson correlation analysis. A  $p$  value <0.05 was regarded as being statistically significant.

#### RESULTS-

There were a total of 100 patients with ACS studied. As shown in Table 1, there was no significant difference between the two study groups regarding age, hypertension, diabetes mellitus (DM), smoking, or serum lipids. There was also no significant difference between the two groups regarding the chronic use of drugs (beta blockers, diuretics, angiotensin-converting-enzyme inhibitor, angiotensin receptor blockers, calcium channel blockers, nitrates, statins, aspirin, oral hypoglycemic, or Insulin) (Table 2). Logistic regression analysis for independent predictors of LM/3VD is shown in Table 3. The independent predictors of LM/3VD in order of significance were: age ( $p < 0.001$ ), heart rate ( $p < 0.001$ ) and IIEF <17 ( $p < 0.001$ ).

#### DISCUSSION:

With the changes in lifestyles of people, epidemiological transition has taken place and instead of communicable diseases, now noncommunicable diseases like coronary artery diseases are the number 1 killer throughout the world including developing countries like India. In our study, the angiographic severity of CAD was found to be more in patients with moderate or severe ED (IIEF score <17). These patients had significantly higher incidence of LV/3VD than patients with mild or no ED (IIEF score  $\geq 17$ ).

ED though mostly psychological, could be considered as a part of the systemic manifestations of atherosclerosis. Both ED and CAD seem to share the same risk factors and to show similar characteristics such as endothelial dysfunction.<sup>13</sup>

The vast majority of the cases of organic ED seem to be due to vascular etiologies. Among the known organic factors for ED, 40.5% are shown to be of arterial origin, 10% of cavernosal origin, 12.5% were due to neurogenic causes, and 1.8% of the patients are found to be associated with endocrinologic causes.<sup>14</sup>

Hypertension, which is a known risk factor for CAD, has also been found to be a culprit in patients with ED. ED can be considered as an early marker of hypertension.<sup>15</sup>

DM is also an important risk factor for development of ED; DM patients were found to be at least three times more likely to develop ED than nondiabetic individuals.<sup>16</sup>

Possible mechanisms by which DM may cause ED include direct complications, endothelial dysfunction, oxidative stress, advanced glycation end products, and DM associated psychological disorders.<sup>17</sup>

The relation between ED and CAD has been previously studied by several investigators. In their meta-analysis, Dong and his colleagues<sup>18</sup>

concluded that ED significantly increases the risk of CAD, stroke and all-cause mortality. This increased risk was related to ED and was independent of other CAD risk factors.

The severity of ED was found to be correlated with the number of occluded vessels documented by coronary angiography, in male patients with acute MI.<sup>19</sup> Also, the prevalence of ED was found to be higher in men with CAD. Patients with ED were found to have a more extensive CAD as documented by coronary angiography.<sup>20</sup>

In patients presented with acute MI, the presence of ED was found to be associated with and adverse outcome. ED was found to be a significant and an independent predictor of death and re-hospitalization in men presented with acute MI.<sup>21</sup>

In our study, the presence of IIEF score <17 was a significant and an independent predictor for the presence of LM/3VD. The independent predictors of LM/3VD in order of significance were: age, heart rate, IIEF <17, Killip class >1, and ST-depression or ST-elevation in lead aVR ≥1 mV.

**CONCLUSION**

The study concludes that the presence of moderate or severe ED in men with ACS is associated with more extensive CAD manifested by more incidence of LM/3VD. In men with ACS, IIEF score <17 was a significant and independent predictor for the presence of LM/3VD.

**Tables and charts:**

**Table 1 showing demographic data and risk factors in the two groups according to the severity of endothelial dysfunction.**

Characteristic	IIEF score >17 N=50	IIEF score < 17 N=50	P value
Age	39.2 ± 7.82	44.3 ± 7.67	0.21
Hypertension	38	35	0.82
Diabetes	25	24	0.95
Smoking	35	31	0.92
Total cholesterol	192.2±39.5	198.3±37.5	0.72
LDL (mg/dl)	114.2±31.2	119.3±29.2	0.51
HDL (mg/dl)	40.5±9.21	38.5±8.6	0.67
Triglyceride (mg/dl)	153.3±37.5	161.3±34.5	0.42

**Table 2 showing chronic drugs in the two groups according to the severity of endothelial dysfunction.**

Drugs	IIEF score >17	IIEF score < 17	P value
Beta Blockers	13	14	0.96
Diuretics	7	8	0.86
ACE inhibitors	16	19	0.85
CCB	5	8	0.56
Nitrates	21	20	0.98
Statins	24	25	0.95
Aspirin	24	26	0.92
Oral hypoglycemic	18	20	0.72
Insulin	11	12	0.87

**Table 3 showing logistic regression analysis for predictors of LM/3VD.**

Variabes	Odds ratio	95% CI	P Value
Age	5.2	4.81-5.42	<0.001
Heart rate	4.2	3.91-4.52	<0.001
IIEF Score <17	3.3	3.11-3.41	<0.001
Killip class >1	2.91	2.61-3.21	0.012
ST depression or ST elevation in aVR >1mV	2.52	1.92-2.92	0.012

IIEF: International index of erectile function.

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