VOLUME-8, ISSUE-11, NOVEMBER-2019 • PRINT ISSN No. 2277 - 8160 • DOI : 10.36106/gjra

Original Research Paper

Cardiology

CORONARY ARTERY DISEASE (CAD, NSTEMI AND STEMI) AND CORONARY RISK FACTORS IN URBAN AND RURAL PATIENTS IN BUNDELKHAND AREA OF UTTAR PRADESH

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KEYWORDS : Myocardial infarction, Rural and Urban population, Risk factor, Outcome

INTRODUCTION

Myocardial infarction (MI), commonly known as a heart attack, occurs when blood flow decreases or stops to a part of the heart, causing damage to the heart muscle. The scomplete blockage of a coronary artery caused by a rupture of an atherosclerotic plaque is usually the underlying mechanism of an MI. Risk factors include high blood pressure, smoking, diabetes, lack of exercise, obesity, high blood cholesterol, poor diet, and excessive alcohol intake, among others.

CAD symptoms are classified as stable angina and ACS. ACS is a collective term for unstable angina, NSTEMI, and STEMI. The main symptom of coronary insufficiency is angina pectoris; angina pectoris involves localized retrosternal chest pain triggered by physical and mental stress.

NSTEMI was described for unstable angina and myocardial infarction with an increase of cardiac enzymes such as high-sensitivity cardiac troponin T without ST-segment elevation on electrocardiogram. A 12-lead electrocardiogram was used at rest for the temporary recording of the sum of the electrical activity of the heart for diagnosis of STEMI or cardiac arrhythmias in all patients.

AIMS AND OBJECTIVES

Our aim of study is to compare the risk factors of patients of CAD in rural and urban area of Bundelkhand (Jhansi, Jalaun, Mahoba, Tikamgarh, Lalitpur, Datia and Shivpuri).

MATERIALS AND METHODS

The present study was conducted on patients of coronary artery diseases admitted to the wards of Maharani Laxmi Bai Medical College, Jhansi. study was done in the department of Medicine. We included 87 patients who were confirmed to have CAD on the basis of ECG and serum biomarkers.

Inclusion criteria:

Patients included in the study were diagnosed with STEMI, defined by the typical rise and fall of cardiac markers of myocardial necrosis with at least one of the following .

1. Symptoms of ischemia;
2. echocardiogram changes indicative of new ischemia (≥ 0.1 mV in two or more standard leads, ≥ 0.2 mV in two or more contiguous pre-cordial leads, or a new left bundle branch block.
3. 12 h after symptoms, levels of creating kinase and its isoform (CKMB) were twice the normal upper limit or a troponin level was increased to the standard of MI (according to the normal local laboratory value.

All patients had complete medical records and had undergone coronary angiography.

Exclusion criteria:

Patients with the following conditions were excluded:

1) congenital heart disease
2) cardiomyopathy,
3) myocarditis,
4) Takayasu's arteritis
5) vascular dysplasia;
6) coronary artery embolism;
7) severe aortic valve stenosis
8) myocardial hypertrophy.

OBSERVATION AND RESULTS

A total of 87 patients who were fulfilling the criteria were taken for the study. Majority of them were males i.e. 66 and rest were females i.e.21. Total 60 patients were from rural background where 42 were males and rest were females while 27 were from urban background where 24 were males and rest were females.

Table 1: Distribution of cases according to their sex

Sex	Rural	Percentage	Urban	Percentage
Male	42	70.00%	24	88.8%
Female	18	30.00%	03	11.1%

The age of the population taken for the study was either below 45 years or above it. A total of 26 patients were below 45 years out of which the majority were from rural background i.e. 22 () while rest were from urban. Rest 56 patients were of more than 45 years of age where 38 were from rural background and rest were from urban.

Table 2: Patient distribution according to age

Age (in years)	Rural	Percentage	Urban	Percentage
<50	22	70.0%	09	33.3%
>50	38	30.0%	18	66.6%

A total of 5 risk factors i.e. BMI,Smoking, Diabetes Mellitus, Hypertension, Dyslipidemia were taken for the study. Average BMI for rural population was 22 while for the urban ones it was 22.5. a total of 36 patients from rural background were smokers while 18 from urban background were smokers. 07 rural patients were having diabetes mellitus while 7 urban were having the disease. 15 patients of the rural background were hypertensive while 5 from the urban background were hypertensive. 24 rural patients had dyslipidemia while 08 urban patients had this problem.

Table 3: Patient distribution according to their risk factors

Risk factors	Rural	Percentage	Urban	Percentage
BMI (Average)	22	-	22.5	-
Smoking	36	60.0%	18	66.6%
Diabetic mellitus	07	11.6%	07	25.92%
Hypertension	15	25.00%	05	18.51%
Dyslipidemia	24	40.00%	08	29.6%

DISCUSSION

This study investigated the prevalence of CORONARY ARTERY DISEASE (CAD, NSTEMI AND STEMI) AND CORONARY RISK FACTORS IN URBAN AND RURAL

PATIENTS ON BUNDELKHAND AREA OF UTTAR PRADESH. The sample size was 87. Participants were of both sexes and of different age in which 66(75%) were male out of which 24 (88.8%) were from urban area and 42 (70%) were from rural area.In study 21 (25%) were female out of which 3 (14%) were from urban area and 18 (86%) were from rural area. 31 (35%) participants were less than the age of 50 yrsout of which 09(30%) were from urban area and 22 (70%) were from rural area. 56 (64%) were more than age of 50 yrs, out of which 18 (32%) were from urban area and 38 (78%) were from rural area.

Among the all major risk factor the important factors are cigarette smoking, hyperlipidemia, hypertension, and diabetes mellitus. These have generally been associated with an increased incidence of fibrous plaques and their sequelae. Cigarette smoking is a well-known risk factor for the development of coronary artery disease in population. In our study out of 87 patients, 54 (62.00 %) patients had cigarette/bidi smoking as one of the major risk factors. Out of the 54 patients who smoked, 36 (60.05% of rural patients) patients were from rural area and 18 (66.60% of urban patients) were from Urban area. Smoking adversely affects all phases of atherosclerosis given that it fastens thrombotic process, instigates endothelial dysfunction, augments pro-inflammatory effects, and induces coronary vasoconstriction even in patients with normal coronary vasculature which can induce CAD in young age also.

Dyslipidemia has been shown to be an important risk factor for CAD. Indians world wide demonstrate a triad of high triglycerides, high LDL-C and low HDL-C levels. Our study also demonstrated presence of dyslipidemia in patients. Since triglycerides bring change in LDL particle size, density, distribution and composition producing small dense LDL which is more atherogenic. Thus estimation of serum triglyceride levels is an indirect measurement of LDL particle. In our study dyslipidemia was present in 32 (36%) patients out of which 24 (40 % 0f rural patients) were from rural area and 08 (29.6% of urban patients) from urban area.

Hypertension was found to be less common in our study in comparison to other risk Factors. In our study 20 (22%) patients were found hypertensive out of which 15 (25% of rural patients) were from rural area and 05 (18.51% of urban population) were from urban area.

Diabetes was comparable with hypertension and 14 (16% of whole patients) patients were diabetic in our study out of which 07 (11.6% of rural patients) were from rural area and 07 (25.9% of urban patients) from urban area.

Obesity is also a major risk factor for CAD but in our study sample that was absent , probably due to small sample size.

LIMITATIONS

Although this study has effectively highlighted the association with risk factor and rural and urban habitat for cad, there were few limitations. this study was conducted in a single center, which may not be representative of whole population. in this study,as no control group was used, the risk of each factor could not be analyzed statistically. larger studies involving multiplecenters are required focusing on the risk factors and other factors related to cad.

CONCLUSION

In our study the risck factors for cad such as smoking and diabetes have more prevalence at urban area than rural area and for dyslipidemia and hypertension prevalence is more at rural area than urban area. the most important thing is to do risk factor modification which is a quite challenging task. since cigarette smoking is highly prevalent in young, preventive educational programs along with smoking cessation clinics need to be established. diabetes and cholesterol education should be provided to the population especially the youth by medical personnel on a priority basis. thus, all the patients should be subjected to an early recognition and risk stratification for better outcomes and prognosis.

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