ORIGINAL ARTICLE

Assessment of Stress Hyperglycemia in Cases of Acute Coronary Syndrome

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ABSTRACT

Aim: Assessment of stress hyperglycemia in cases of acute coronary syndrome.
Methods: This descriptive multicentre study was done at Cardiology Departments, Bolan Medical College Hospital, Quetta and Shaikh Zayed Hospital Lahore from 1st January 2016 to 31st December 2016. Total 100 cases of acute coronary syndrome both male or female age range from 40-70 years were selected for present study. Serum glucose level at the time of admission was recorded and in-hospital mortality rate was recorded in pre-designed proforma.
Results: Average age of the selected patients for study was 57±7 years. Out of 100 patients, 40(40%) patients were found with stress hyperglycemia at admission in ward and in-hospital mortality rate was 14(14%). Statistically insignificant (P = 0.075) association of in-hospital mortality with stress hyperglycemia was noted.
Conclusion: The higher number of stress hyperglycemia in cases of ACS and statistically insignificant association of in-hospital mortality with stress hyperglycemia was noted.

Keywords: Acute coronary syndrome, Stress hyperglycemia, In-hospital mortality

INTRODUCTION

Coronary heart disease (CHD) is one of the major cause of death worldwide and caused 1/5 deaths in USA in year2004.[1] In the year 2008, almost 770000 American individuals had a new coronary attack and almost 430000 individuals had a recurrent attack.[1] Most common presentation of CHD in emergency room is with acute coronary syndrome (ACS) which is a clinical entity including un-stable angina, non-ST&ST segment elevation MI (myocardial infarction).[2-3]

Globally, ACS is most important cause of mortality and also burden on hospitals. In Pakistani population, CAD is responsible for 11% of all deaths.[3]

In literature, many studies have established that hyperglycemia at the time of admission is very common in patients of ACS and is a risk factor for in-hospital complications and mortality.[5] In patients of ACS, the prevalence of hyperglycemia at the time of admission ranges from 25%-50%.[5-6]

Many studies documented relative risk of in-hospital mortality in ACS cases who were unaware that they had diabetes mellitus (DM) at time of admission is 4 fold higher than non-diabetics.[7,8]

Study may help us to reduce the mortality and morbidity by early screening for stress hyperglycemia at time of admission in cases of ACS.

PATIENTS AND METHODS

This descriptive multicentre study was done at Cardiology Departments, Bolan Medical College Hospital, Quetta and Shaikh Zayed Hospital Lahore from 1st January 2016 to 31st December 2016. Written informed consent was taken from every patient. Total 100 patients of acute coronary syndrome either male or female with age from 40-70 years were selected. Demographic profile of all the selected patients was noted on pre-designed proforma. Patient having glucose level ≥140mg/dl at the time of admission was labelled as patient of stress hyperglycemia. At the time of admission of patients with ACS, blood sample was taken and send to laboratory for blood glucose levels. Findings of laboratory results were noted in term of stress hyperglycemia (Yes/No) and during the hospital stay, fate of the patients was also noted. All the collected data was entered in SPSS version 17 and analyzed. Mean and SD was calculated for age and frequencies were calculated for stress hyperglycemia (Yes/No), in-hospital mortality (Yes/No) and gender. Stratification was done in relation to in-hospital mortality. Chi-square test was used to see the association between stress hyperglycemia and in-hospital mortality. P. value ≤ 0.05 was considered as statistically significant.

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RESULTS

In present study, mean age of the patients ACS was 58±43 years. Out of 100 patients of ACS, stress hyperglycemia was found in 40(40%) patients and mortality rate was 14(14%) (Tables 1-2).

Table 1: Frequency of stress hyperglycemia (n = 100)

Stress of hyperglycemia	No.	%
Yes	40	40.0
No	60	60.0

Table 2: Rate of mortality (n=100)

Mortality	No.	%
Yes	14	14.0
No	86	86.0

Table 3: Association of in-hospital mortality with stress hyperglycemia (n = 100)

In-hospital mortality	Stress hyperglycemia			P value
	Yes (%)	No (%)	Total	
Yes	9(64.29%)	5 (35.71%)	14 (14%)	0.075
No	31(36.05%)	55(63.95%)	86 (86%)	
Total	40 (40%)	60 (60%)	100(100%)	

During the study period out of 14(14%) expired patients, stress hyperglycemia was noted in 9(64.29%) patients and out of 86(86%) alive patients, stress hyperglycemia was seen in 31 (36.05%) patients. But statistically insignificant association between stress hyperglycemia and in-hospital mortality was noted with p value 0.075 (Table 3).

DISCUSSION

According to American Heart Association Scientific Statement on Hyperglycemia and Acute Coronary Syndrome, hyperglycemia was defined as a blood glucose level >140mg/dL at any time during hospitalization.[14] However, the relationship between glycemic status and the outcome may vary depending on the diabetic status of the patient. In non-diabetic patients, the mortality rate increases when blood glucose >120mg/dL, while in diabetic patients, a blood glucose >200 mg/dL is associated with a poor outcome.[9]

In present study, mean age of the patients ACS was 58±43 years. Bhalli et al[10] and Mansour et al[11] also reported comparable mean age of ACS patients.

In literature, rate of stress hyperglycemia in cases of ACS is 25-50% at the time of admission[12]. Nordin et al[13] reported stress hyperglycemia was noted in 38% patients of ACS which is comparable with our study. In study of Modenesi et al[14] reported the rate of stress hyperglycemia was noted in 26.4% patients. Marfella et al[15] also reported stress hyperglycemia in 29% patients.

In present study, out of 14 expired patients, stress hyperglycemia was noted in 64.29% patients but insignificant association between stress hyperglycemia and in-hospital mortality was noted. In one study mortality rate was 14% in patients of stress hyperglycemia[16].

Cheung et al reported statistically significant higher death rate in patients having mean serum glucose level ≥144 mg/dL[17]. Suleiman et al also reported statistically association between serum glucose levels at admission and mortality in non-diabetics with AMI[18]. Svensson et al also showed correlation between serum glucose level at admission and in-hospital death[19].

CONCLUSION

Findings of present study showed a higher number of stress hyperglycemia in cases of ACS and statistically insignificant association of in-hospital mortality with stress hyperglycemia was noted.

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