ORIGINAL RESEARCH PAPER

Neurology

KEY WORDS: R.B.S.- random blood sugar

ROLE OF RANDOM BLOOD GLUCOSE LEVELS IN PROGNOSIS OF ACUTE ISCHEMIC STROKE

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ABSTRACT

Introduction – Stroke burden is on a rise in India. Hyperglycemia is related closely to outcome of stroke independent of diabetic status of the patient. High plasma glucose levels are associated with increased mortality and morbidity in stroke.
Material and methods- 100 patients of stroke were evaluated for random blood glucose levels. Infarct size , NIHSS score and complications were compared in normoglycemic group (R.B.S. < 140 mg/dl) and hyperglycemic group (R.B.S. > 140mg/dl).
Results- patients with R.B.S.>140mg/dl were associated with increase in infarct size, NIHSS score,increase in complications like pneumonia, bed sores, urinary tract infections, seizures and death.

Introduction

The definition of stroke ,revised by world health organization is "a neurological deficit of cerebrovascular cause that persists beyond 24 hours or is interrupted by death within 24 hours"2

Stroke burden is on rise in India . The reason for rise in stroke burden includes smoking, increased longevity and lifestyle accompanying urbanization. Indians may be genetically predisposed to metabolic syndrome consisting of central obesity, high levels of triglycerides, and low levels of HDL cholesterol and glucose intolerance.6

Hyperglycemia is present in 20-40% with acute ischemic stroke59. The presence of hyperglycemia is associated with increased mortality and morbidity, greater stroke event, and larger infarct volumes.63

Hyperglycemia predicts higher mortality and morbidity after stroke independent of other adverse prognostic factors, more so in patients without prior history of diabetes.60-64

Aims and objectives:

1- To study the ischemic stroke patients in relation to glycemic status on admission.
2- To correlate the size of infarct in CT scan with relation to glycemic status.
3- To follow these patients during hospital stay for clinical recovery using National institute of health stroke scale.[NIHSS]

Material & Methods :- Study was conducted at Hamidia Hospital among 100 patients of stroke over a period of 2 years. 2015-2017 patients were investigated with CT Scan Brain and there RBS at time of admission was taken. Patients NIHSS Score were determined to predict morbidity / mortality and prognosis . Two groups were made of patients with normoglycemia(those with RBS <140 mg/dl) and hyperglycemia(RBS>140 mg/dl) and various parameters were compared in the two groups. Size of infarct was determined by Multi Slice CT Brain scan and Sugar levels were correlated with the size of infarct. Three groups were determined as those with infarct size less than 2cm2, 2-5 cm2 and greater than 5cm2. Occurrence of normoglycemia and hyperglycemia was seen in three infarct size groups.

Results :-

Average age Group of patients who were admitted with stroke was 57.2 years,72% patients being males & 28% being females in study group. Out of all patients,58% patients had normal RBS (<140ms/dl) while 42% patients had RBS (>140 ms/dl).

Out of 72 male patients 50% had normal RBS while 44% had hyperglycemia while out of 28 females 64% had normal RBS while 36% had hyperglycemia.

Mean RBS in normoglycemic group was 117mg/dl while hyperglycemic group was 187 mg/dl.

Size of infarct was determined by Multi Slice CT Brain scan and Sugar levels were correlated with the size of infarct.

Three groups were determined as those with infarct size < 2cm2, 2-5 cm2 and >5cm2.

Out of 48 patients with small size infarcts 40 were normoglycemic while 8 had hyperglycemia.

Out of 40 patients with medium size infarcts 18 had normoglycemia while 22 had hyperglycemia.

Almost all 12 patients who has large infarct were hyperglycemic suggestion that hyperglycemia had direct relation to infarct size.

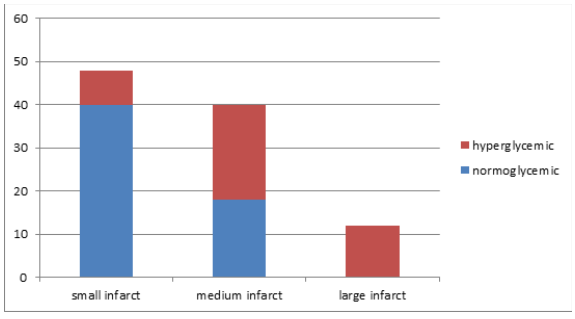

DIAGRAM1-shows distribution of normoglycemic and hyperglycemic patients with variuos infarct sizes.

NIHSS Score were calculated at time of admission

Mean NIHSS Score at time of admission in normoglycemic patients was 5.55 , while in hyperglycemic group was 21.4 [pearson Coefficient r=0.771 (p<0.001)]

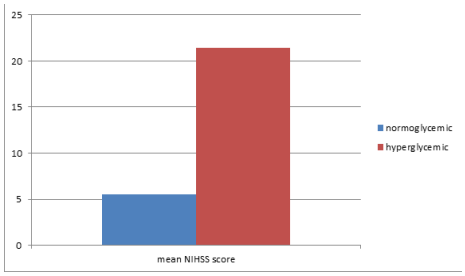

DIAGRAM 2-shows mean NIHSS score in normoglycemic and hyperglycemic patients.
This suggested a direct relation between RBS at admission and NIHSS scoring.

Various complications including UTI, pneumonia, seizures, bed sore were studied in the two groups.

Occurrence of urinary tract infection, pneumonia, seizures, bed sore, sepsis and death was more in hyperglycemic group. Acute coronary syndromes were seen equally distributed in two groups with 4 patients each with normoglycemic hyperglycemia being affected.

Death was three times more common in hyperglycemic group with hyperglycemic group with mortality of 6 patients in this group and 2 deaths in normoglycemic group.

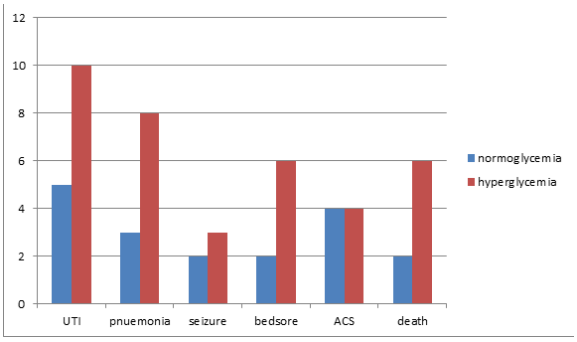

DIAGRAM 3 shows presence of complications in normoglycemic and hyperglycemic groups.

Discussion :- Our study found that hyperglycemia associated with increase in size of infarct. This finding was in accordance with study of (Louise et al.)59 who had found that in his study that hyperglycemia was present in 20-40% patients regardless of history of diabetes.

(Tracey et al)73 in his study also had concluded that hyperglycemia was independently related to the infarct size.

NIHSS score was directly related to hyperglycemia in our study. This was supported by previous study of [Gracy et al]3 who had concluded that recovery after stroke was seen commonly in normoglycemic patients. Findings of our study was comparable to Adams .et.al.74who found in his study that baseline NIHSS score strongly predicted the outcome.

[Johston et al]75 also found in his study that infarct volume was predictor for prognosis of patients and mean NIHSS score for normoglycemic status was lower and that of hyperglycemic group.

Summary and Conclusion -

Hyperglycemia in Stroke (RBS>140mg/dl) was found to have linear relation with infarct size and NIHS Score and was strong predictor of complication and mortality with patient's having hyperglycemia being at increased risk of complications and death in stroke.

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