

ORIGINAL ARTICLE

Prevalence of Diabetes Mellitus in Acute Ischemic Stroke Patients at Tertiary Care Hospital

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ABSTRACT

Back ground: The third largest cause of death around the globe is stroke. In the United States the largest cause of disability is also stroke. For stroke and coronary heart disease, independent main risk factor is diabetes mellitus.

Objective: To determine the prevalence of diabetes mellitus in acute ischemic stroke patients at tertiary care hospital.

Material and methods: This cross-sectional study done in General Medicine Department at alnafees medical college, Islamabad, Pakistan. For a period of one year this study was carried out from June 2018 to June 2019. In our study, totally 150 acute ischemic stroke patients were included to determine the prevalence of diabetes mellitus in acute ischemic stroke patients. SPSS version 19 was used to analyze our data. From both the indoor and emergency departments, all patients fulfilling inclusion and exclusion criteria for acute ischemic stroke were carefully chosen. Confirmation of acute ischemic stroke was confirmed by CT scan of brain and then HbA1c levels was done for all the confirm patients.

Results: In our study, totally 150 patients were included. There were more male 53.33% (n=80) in our study as compared to female 46.66% (n=70). On the basis of age they were divided into three groups in our study. Group A (30-45 years) have 25 (16.66%) acute ischemic patients, Group B (46-60 years) have 60(40%) acute ischemic patients while Group C (61-75 years) have 65(43.33%) acute ischemic patients. Mean age was observed as 61±9 years. The overall prevalence of diabetes mellitus in acute ischemic stroke was 24% (n=36). In 76% (n=114) of the patient, diabetes mellitus was not observed.

Conclusion: High prevalence of diabetes mellitus was observed amongst acute ischemic stroke patients. In order to reduce long-term morbidity and mortality, it is advised to diagnose all the acute ischemic stroke patients for diabetes mellitus. In order to know the exact prevalence of the problem, every health care setup must have surveillance record.

Keywords: Prevalence; diabetes mellitus; acute ischemic stroke; surveillance

INTRODUCTION

Diabetes is a metabolic problem caused by problem in insulin secretion, insulin action, or both (1). Globally, diabetes mellitus is a main public health concern and is growing continuously. In the world the estimated prevalence of diabetics in 2000 was reported about 171 million amongst adults having age more than 20 years (2). Polydipsia, polyuria, weight loss, polyphagia and blurred vision are the symptoms of marked hyperglycemia (3). The third largest cause of death around the globe is stroke. In the United States the largest cause of disability is also stroke. For stroke and coronary heart disease, independent main risk factor is diabetes mellitus. The utmost reliable predictors of recurrent stroke or stroke after transient ischemic attack are diabetes. The risk of recurrent stroke in diabetic patients is increased and ranges from 2.1 to 5.6 times high as compared to non-diabetic patients and it does not depend upon the control of glucose during inter-stroke period (4). In about one-third of all patients having complications like stroke, myocardial infarction and diabetic foot are diabetics but they are undiagnosed for diabetes because they are not recognized by clinician (5). In acute stroke patients, the estimated prevalence of previously

recognized diabetes mellitus is about 8 - 20%. While the estimated prevalence of un-recognized diabetes mellitus is about 6 to 42% in acute stroke patients (6). 24.8% patients were diagnosed with diabetes mellitus and 36.3% of patients were diagnosed with transient hyper-glycaemia, in a study of supratentorial strokes (7).

Underlying glucose intolerance or diabetes is reflected by high level of glucose and this is suggested by much evidence (8). Sudden blood loss of circulation to an area of the brain is characterized as stroke. This will result in loss of neurologic function correspondingly. Previously this was called as cerebrovascular accident or stroke syndrome. Largely, though, stroke is categorized into two types as hemorrhagic or ischemic stroke. Thrombosis or embolism results in a stroke called acute ischemic stroke (9). Globally the third leading cause of death is stroke with in thirty days, 10% of the patient with acute ischemic stroke die (10). In acute stroke, most human studies have revealed that, worst clinical outcome is linked in patients of hyperglycemia with or without diabetes as compared to patients having no hyperglycemia. In spite of these facts, hyperglycemia, though, is mostly unnoticed in these measures as it is merely credited to physiological stress of

acute stroke. Remarkably, 20% of the prevalence of diabetes was reported in hyperglycemic stroke patients without prior diagnoses of diabetes (11). In patients of acute stroke the prevalence of diabetes mellitus have been reported in numerous previously studies. A previous study carried out by Zahra F, et al showed that 50(20%) patients out of 250 patients of acute stroke were diagnosed with diabetes mellitus (11). 21.1% patients out of 142 patients of acute stroke were diagnosed with diabetes mellitus in a previous local research study (12). In another earlier study 38(28.57%) out of 133 patients were diagnosed with newly diabetes mellitus (13). In patients with ischemic stroke, 45.8% patients with diabetes mellitus have been reported by Jia Q et al, 2012 (14). In the literature the prevalence of diabetes mellitus in patient of acute ischemic stroke is not consistent like 20-45% (11-14). The main aim of this study was to determine the exact frequency of diabetes in acute ischemic stroke patients. Ever since, there is a lack of local data about undiagnosed diabetes mellitus in acute ischemic stroke patients, this study was carried out to determine the prevalence of diabetes mellitus in acute ischemic stroke patients.

MATERIALS AND METHODS

This was a cross-sectional study done in General Medicine Department at alnafees medical college, Islamabad, Pakistan. For a period of one year this study was carried out from June 2018 to June 2019. In our study, totally 150 acute ischemic stroke patients were included to determine the prevalence of diabetes mellitus in acute ischemic stroke patients. Inclusion criteria of our study were patients of both genders with acute ischemic stroke having age 30-75 years. While the exclusion criteria for our study was all the patients having hemorrhagic cerebrovascular accident diagnosed by CT scan and with atrial fibrillation diagnosed on ECG. From both the indoor and emergency departments, all patients fulfilling inclusion and exclusion criteria for acute ischemic stroke were carefully chosen. Consent form was signed from all the patients included in our study and they were questioned about their medical history and were also checked for neurological problem. Confirmation of acute ischemic stroke was confirmed by CT scan of brain and then HbA1c levels was done for all the confirm patients. HbA1c levels of the patients were carried out in the department of Pathology, alnafess medical college and acute ischemic stroke was confirmed by the CT scan of brain in Radiology Department of alnafees medical college, Islamabad. On a specially designed proforma, all information's were documented. SPSS version 19 was used to analyze our data. For age mean and standard deviation was calculated while for gender and presence or absence of diabetes mellitus frequency and percentages were calculated.

RESULTS

In our study, totally 150 patients were included. There were more male 53.33% (n=80) in our study as compared to female 46.66% (n=70). (Figure 1) On the basis of age they were divided into three groups in our study. Group A (30-45 years) have 25 (16.66%) acute ischemic patients, Group B (46-60 years) have 60(40%) acute ischemic patients while Group C (61-75 years) have 65(43.33%) acute ischemic

patients. Mean age was observed as 61 ± 9 years. (Figure 2) The overall prevalence of diabetes mellitus in acute ischemic stroke was 24% (n=36). In 76% (n=114) of the patient, diabetes mellitus was not observed. The overall prevalence of diabetes mellitus in acute ischemic stroke was 24% (n=36). In 76% (n=114) of the patient, diabetes mellitus was not observed. 25 male patients were diagnosed with diabetes mellitus while only 11 female patients with acute ischemic stroke were diagnosed with diabetes mellitus. Mean and SDs for HbA1c level in diabetes mellitus patients was 6.4 ± 1 . (Table 1)

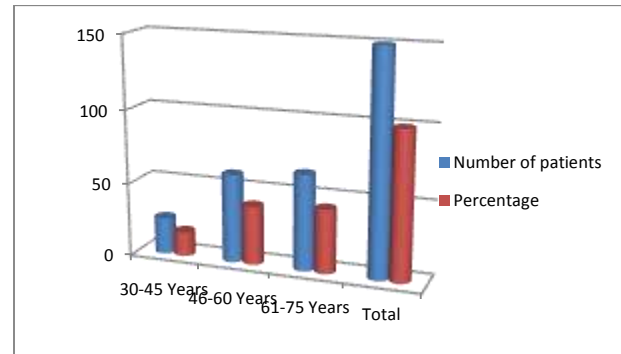


Figure 1: Age wise distribution of patients

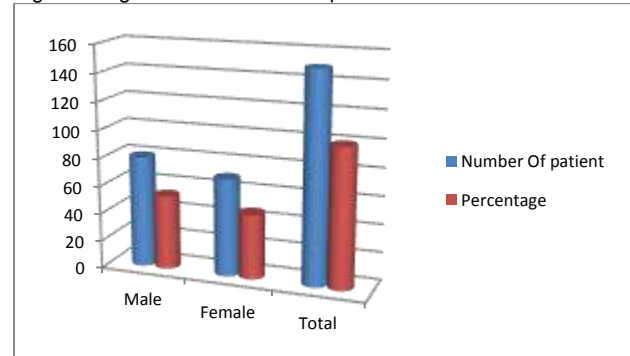


Figure 2: Gender wise distribution of patients

Table 1: Prevalence of diabetes mellitus in acute ischemic stroke patients

Diabetes mellitus	Gender	Gender wise number of patients	Total number of patients diagnosed with diabetes	Percentages
Yes	Male	25	36	24%
	Female	11		
No	Male	55	114	76%
	Female	59		
Total		150		100%

DISCUSSION

Worldwide the second major contributor to mortality is stroke and amongst the elderly it is considered as primary cause of disability. Amongst the numerous types of stroke, ischemic stroke is the highly prominent type and is responsible for disability of long-term. The cause of the stroke is because of brain portion shortage of oxygen. Stroke could also be caused by bursting of blood vessel or it might be due to blood vessel blocking by a clot. The brain becomes damage due to lack of oxygen. Affected part of the brain and quantity of affected tissue shows the long-term effects of the stroke. For stroke the well-known risk

factor is diabetes mellitus but though, in various study there is variation in the magnitude of the risk (15). In the developed world, the number of adults having diabetes is forecasted to increase by 42% in 1995-2025 (16). In 1995 in Pakistan, 5.54 million people out of total 132 million populations were reported to be suffered by diabetes having over all prevalence of 4.19% according to an international report (17). In patients of acute stroke the prevalence of diabetes mellitus have been reported in numerous previously studies. In our study, totally 150 patients were included. There were more male 53.33% (n=80) in our study as compared to female 46.66% (n=70). This was in contrast with a previous study done by Farrukh et al. (18). On the other hand, our results are in accordance with previous studies who reported high prevalence of stroke in male as compared to female (19-21).) On the basis of age they were divided into three groups in our study. Group A (30-45 years) have 25 (16.66%) acute ischemic patients, Group B (46-60 years) have 60(40%) acute ischemic patients while Group C (61-75 years) have 65(43.33%) acute ischemic patients. Mean age was observed as 61±9 years. The overall prevalence of diabetes mellitus in acute ischemic stroke was 24% (n=36). In 76% (n=114) of the patient, diabetes mellitus was not observed. The overall prevalence of diabetes mellitus in acute ischemic stroke was 24% (n=36). In 76% (n=114) of the patient, diabetes mellitus was not observed. 25 male patients were diagnosed with diabetes mellitus while only 11 female patients with acute ischemic stroke were diagnosed with diabetes mellitus. Mean and SDs for HbA1c level in diabetes mellitus patients was 6.4±1. Increase prevalence of diabetes mellitus in acute ischemic stroke patients as compared to our study were reported in a study who diagnose 38(28.57%) acute ischemic stroke patients for diabetes mellitus out of 133 acute ischemic stroke patients (22). Comparable prevalence was reported in a study done by Zahra F, et al who reported 50(20%) acute ischemic stroke patients with diabetes mellitus out of total 250 acute ischemic stroke patients (11). 21.1% prevalence of diabetes mellitus was also reported in another local study of 142 acute ischemic stroke patients (13). A previous study done by Sheikh et al reported higher prevalence (35.2%) of diabetes mellitus in acute ischemic stroke patients of Pakistan (24). An earlier study in 2012 by Jia Q et al. reported that 45.8% acute ischemic stroke patients had diabetes mellitus (25). A study done by Marjukka et al reported has strong association with increased risk of acute ischemic stroke (26).

CONCLUSION

High prevalence of diabetes mellitus was observed amongst acute ischemic stroke patients. In order to reduce long-term morbidity and mortality, it is advised to diagnose all the acute ischemic stroke patients for diabetes mellitus. In order to know the exact prevalence of the problem, every health care setup must have surveillance record.

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