

Frequency of Modifiable Risk Factors for Ischemic Stroke in Diabetics and Non-Diabetic Patients in a Tertiary Care Hospital

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ABSTRACT

Aim : To evaluate and compare the possible significant modifiable risk factors of ischemic stroke in diabetics and non-diabetic patients.

Study design: Cross-sectional study

Place and duration of study: Department of Neurology, ShaikhZayed Hospital Lahore from 1stMay 2017 to 30thApril 2019.

Methods: Two hundred patients of ischemic stroke were included. They were divided into two groups; group A (diabetics) and Group B (non-diabetic) ischemic stroke patients. Diagnosis of stroke was made with brain imaging and clinical presentation.

Results: There were 53% males and 47% females in group A and 56% males and 44% female patients were in group B. Hypertension was present in 87(87%) patients in group A and 74(74%) in group B patients. Dyslipidemia was found in 14(14%) in group A and 6 (6%) in group B which signifies comparatively increase frequency of dyslipidemia in diabetic population in our study. In our study 1 patient in group A and 13 patients in group B were documented as they had no clear risk factors associated with ischemic stroke.

Conclusion: Hypertension, smoking, high lipids level and cardiac diseases are considered as common modifiable risk factors for ischemic stroke in diabetic and non-diabetic patients.

Keywords: Frequency, Modifiable risk factor, Ischemic stroke, Diabetic patients

INTRODUCTION

Ischemic stroke mostly occurs from an episode of occlusion of a major artery in the brain, retina or spinal cord resulting in neurological dysfunction.¹ Ischemic stroke occurs in diabetics and non-diabetic population. Risk factors for ischemic stroke are commonly divided into modifiable and non-modifiable risk factors. Some important non-modifiable risk factors are age, sex, ethnic origin, family history and genetics while common preventable and controllable risk factors include high blood pressure, diabetes mellitus, dyslipidemia, smoking, obesity, cardiovascular diseases and carotid artery disease.^{2,3}

The presence of other risk factors in diabetic patients may prone an individual more to stroke as diabetes itself considers as a risk for stroke. We evaluated common modifiable or preventable risk factors in our study population.

MATERIALS AND METHODS

This cross sectional study was conducted in the Department of Neurology, Shaikh Zayed Hospital Lahore over a period of 2 years from May 2017 to April 2019 to evaluate more common modifiable risk factors among diabetic and non-diabetic ischemic stroke patients. Two hundred patients of ischemic stroke were included. They were divided into two groups A and B. Group A represented diabetics and Group B was of non-diabetic ischemic stroke patients. Each group comprised 100 patients. All baseline investigations were done properly.

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Complete stroke workup was done for all patients of both groups. Diagnosis of stroke was made with brain imaging and clinical presentation. Data was analysed with SPSS version 20.

RESULTS

There were 53 (53%) male patients and 47(47%) female patients in group A and 56(56%) males and 44(44%) female patients were in group B (Table 1). Most of the patients were above 40 and below 80 years of age and only 13 out of total 200 patients were between 18 and 40 years of age (Table 2). Hypertension was present in 87(87%) patients in group A and 74(74%) in group B patients.

Table 1: Frequency of genders in both groups (n=200)

Gender	Diabetic(n=100)	Non diabetic (n=100)
Male	53 (53.0%)	56 (56.0%)
Female	47 (47.0%)	44 (44.0%)

Table 2: Frequency of age in both groups (n=200)

Age (years)	Diabetic (n=100)	Non diabetic (n=40)
18 – 40	4 (4.0%)	9 (9.0%)
41 – 60	44 (44%)	26 (26.0%)
61 – 80	52 (52.0%)	65 (65.0%)

Table 3: Frequency of risk factors in both groups (n=200)

Risk Factors	Diabetic (n=100)	Non diabetic (n=100)
Hypertension	87 (87%)	74 (74%)
Smoking	24 (24%)	27 (27%)
Cardiovascular diseases	24 (24%)	22 (22%)
Dyslipidemia	14 (14%)	6 (6%)
Unknown Undetermined clear etiology (UDCE)	1 (1%)	13 (13%)

Smoking was found as risk factor in 24 (24%) in group A and 27 (27%) in group B. Cardiovascular diseases were found in both groups with no significant difference as 24 (24%) and 22 (22%) in group A and B respectively. Dyslipidemia was found in 14 (14%) in group A and 6 (6%) in group B which signifies comparatively increase frequency of dyslipidemia in diabetic population in our study. In our study 1 patient in group A and 13 patients in group B were documented as they had no clear risk factors associated with ischemic stroke (Table 3).

DISCUSSION

Risk factors for ischemic stroke are commonly divided into modifiable and non-modifiable risk factors. Several studies have documented some modifiable risk factors for ischemic stroke that are common globally but the frequency is variable in these studies. In the present study, there were total 14 out of 200 patients who had no clear risk factors for ischemic stroke. Among these 14 patients, there were 13 patients (13%) in non-diabetic and only 1 patient (1%) in diabetic group who had no clear modifiable risk factors for ischemic stroke. According to this study data analysis hypertension was the single most common high risk factor in both groups while smoking, dyslipidemia and cardiac diseases were present in both groups with frequency of less than 30%. Frequency of hypertension and dyslipidemia were present higher in diabetic group compared with non diabetic patients.

A study by Kamelet al⁴ shows that hypertension, dyslipidemia and myocardial infarction are more common risk factors in diabetics while smoking has found as a risk factor more in non-diabetic stroke patients. Hypertension was more frequent in diabetic patients than in non-diabetic stroke patients (60% vs 48% respectively). Our study has similar results comparing with Kamelet al⁴ for high frequency of hypertension and dyslipidemia in diabetics than non diabetic stroke patients. Another study shows hypertension and higher lipids level as risk factors in diabetic stroke patients compared with non diabetics relatively has similarities with this current study⁵.

Julia et al⁶ shows the prevalence of hypertension (88.6% vs 66.9%), dyslipidaemia (56.6% vs 33.8%), ischemic heart disease (15% vs 8.4%), peripheral vascular disease (3.7% vs 2.8%), Coronary heart disease (35% versus 24%) and atrial fibrillation (16.9% vs 9.8%) were more common in diabetic stroke patients than non-diabetics while smoking was more common among non-diabetic patients (15.4% vs 7.5%). Julia et al has more individual details of various cardiac diseases with more frequent in diabetics than non diabetic population and thus favours our study results.

A study by Stöllberger et al⁷ has the same higher frequency of hypertension in both groups with more in diabetic stroke patients. They documented that about all common modifiable risk factors are present with higher frequency in diabetics than non diabetic stroke patients. According to the Stöllberger et al⁷, hypertension was present as 75% versus 66%, coronary heart disease 35% versus 24%, atrial fibrillation/flutter 32% versus 30% while other heart diseases were present 18% and 17% in diabetic versus non diabetic patients respectively. This study has no clear data regarding dyslipidemia in both groups.

Anwar et al⁸ have documented higher frequency of hypertension, hyperlipidemia, ischemic heart disease in diabetic stroke patients than non diabetic stroke patients. In non diabetic stroke patients, the frequency of valvular heart diseases and atrial fibrillation were more frequent than diabetic patients with stroke. They also recorded the cardiac diseases individually. Smoking was present as a risk factor in both groups with about equal distribution. To compare diabetics versus non diabetic stroke patients, hypertension was 69.7% versus 56.6%, hyperlipidemia 28.9% versus 16.8%, ischemic heart disease 22.4% versus 12.5%, valvular heart disease 5.3% versus 14.1% in diabetic versus non diabetic stroke patients were noted.

In another study, diabetic stroke patients had a higher proportion of ischemic heart disease 11.9% vs 3.9% compared to non-diabetic stroke patients. This study shows no significant difference of hypertension and atrial fibrillation in both groups. Congestive heart failure was noted more in non diabetics compared with diabetic stroke patients (8.3% vs. 15.7%)⁹.

A hospital based descriptive study has shown no significant difference in distribution of risk factors among both groups¹⁰. It is clear that common modifiable risk factors are hypertension, smoking, dyslipidemia, cardiovascular diseases among both groups of ischemic stroke patients and hypertension has identified as a single most common risk factor in diabetics and non diabetics stroke population. Therefore it is suggested to focus more on prevention and proper control over these risk factors to minimise the frequency of ischemic stroke events.

CONCLUSION

Hypertension, smoking, high lipids level and cardiac diseases are considered as common modifiable risk factors for ischemic stroke in patients with and without diabetes. Hypertension and high lipids level are more frequent stroke risk factors in diabetic population.

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