Original Article

Evaluation of Stroke in Diabetic and Non-Diabetic Patients

Stroke in Diabetic and Non-Diabetic Patients

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ABSTRACT

Objective: To determine the frequency and mortality rate of stroke and its types in diabetic and non-diabetic patients of rural Sindh.

Study Design: Descriptive / Observational study

Place and Duration of Study: This study was conducted at the medical ward and out patient's department, Peoples University of Medical and Health Sciences, Nawabshah from January 2016 to December 2016.

Materials and Methods: This descriptive observational study was conducted on 74 cases of stroke. The patients were collected from medical ward and out patient's department of Peoples Medical College Hospital as well as private clinics, 74 patients of acute stroke fulfilling the inclusion/exclusion criteria were included in the study. The clinical and demographic data obtained was collected on a proforma and results were tabulated.

Results: 74 cases of stroke including 48 (64.9%) males were evaluated. Diabetes was diagnosed in 43 (58.1%) cases, among these74 cases 53 (71.6%) cases having ischemic stroke and 21 (28.4%) having hemorrhagic stroke. Majority of diabetic patients were male and having ischemic stroke. 06 (8.1%) non-diabetic cases died, majority of them were male with ischemic stroke, and 14 (18.9%) diabetic cases died among them majority were male having hemorrhagic stroke. As a whole 54 cases survive and the survival rate was more in patients of ischemic stroke.

Conclusion: The ischemic strokes are more prevalent than hemorrhagic strokes especially in diabetic patients. The mortality rate was worse in cases of diabetes especially in hemorrhagic strokes. There is a need of early diagnosis and treatment of diabetes to avoid stroke and to improve prognosis in stroke.

Key Words: Mortality, Ischemic stroke, hemorrhagic stroke, Diabetes.

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INTRODUCTION

Over the last three decades the global stroke mortality rate has decreased but the incidence of stroke is continuously increasing[1,2]. Stroke is the leading cause of permanent disabilityand second common cause of death world wide[3]. The stroke is a sudden loss of functions of brain, it may be ischemic or hemorrhagic[4]. In stroke the functions of brain are lost in the affected area because of that, there is partial/complete disability in one/more limbs with or without speech or visual disturbances. The ischemic strokes are caused by the vascular interruption in the brain, while hemorrhagic stroke are due to rupture of a blood vessel or an abnormal vascular structure[5]. Majority of cases comes in the category of ischemic stroke[6]. Diabetes mellitus is a frequent comorbidity and a major risk factor for stroke.

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The diabetic patients had 1.5 to 3 times increased risk of developing stroke in comparison to other population[7,8,9]. World Health Organization has estimated that there is 170% increase (from 84 to 228 million) in the cases of diabetes in developing countries that is the 75% diabetic population of the world[10]. It was estimated in 2008 that Pakistan is harboring a burden of over 5 million diabetic patients that will be increased to 14.5 million by the year 2025[11].The prevalence of diabetes in Pakistan is 11.77%, which is 11.20% in males and 9.19% in in females. The prevalence of diabetes in urban areas of Pakistan is 14.81% and 10.34% in rural areas[12].

More than 415 million diabetic are there worldwide poses an increased risk of cardiovascular abnormalities including stroke, other comorbid conditions of stroke like hypertension, dyslipidemia, and obesity also has a greater prevalence in diabetes, which further increases the risk of stroke in these patients[13].The increase in the prevalence of diabetes each year making it an independent risk factor for stroke as with increasing age the prevalence of diabetes increases leading to an increase risk of stoke[14]. Diabetes has an increased susceptibility to develop atherosclerosis and producing a major role in the vascular pathology that results in ischemic stroke[15]. The mortality is also reported high in cases of strokes with diabetes, as the stroke is more prevalent in diabetics especially in women[16].

The current study was conducted to determine the frequency of stroke and its types in diabetic and non-diabetic patients of rural Sindh.

MATERIALS AND METHODS

This descriptive observational study was conducted on 74 cases of stroke during January 2016 to December 2016. The patients were collected from medical ward and out patient's department of Peoples Medical College Hospital as well as private clinic. All patients of acute stroke of any gender confirmed by CT scan (computed tomography) / MRI (magnetic resonance Imaging) of brain, aged between 40-70 years were included in the study. Patients with secondary stroke, history of head trauma, having space occupying lesion, patients receiving anticoagulant or steroid therapy, and patients having co-morbidity like hyper coagulative disorders, venous thrombosis, vasculitisetc, were excluded from the study. All the base line investigations were performed and blood sugar level was assessed also with HbA1C level for diagnosis of Diabetes. CT scan or/and MRI of brain was performed in all casesfor confirmation of types of stroke whether ischemic or hemorrhagic. The clinical and demographic data obtained was collected on a proforma and results were tabulated.

RESULTS

In this study we evaluate 74 cases of stroke including 48 (64.9%) males. Diabetes was diagnosed in 43 (58.1%) cases. Among these 53 (71.6%) cases having ischemic stroke and 21 (28.4%) having hemorrhagic stroke (table-1). Majority of diabetic patients were male and having ischemic stroke (table-2). 06 (8.1%) non-diabetic cases died majority of them were male with ischemic stroke, and 14 (18.9%) diabetic cases died among them majority were male having hemorrhagic stroke (table-3).As a whole 54 cases survive and the survival rate was more in male patients of ischemic stroke (table-4).

Table No.I: Number and Age of Diabetic and Non-Diabetic cases of stroke (n=74)

Study Population	No. of cases (%)	Age	Diabetic	Non-Diabetic	Ischemic Stroke	Hemorrhagic Stroke
Male	48 (64.9)	53.46± 9.76	26(54.2)	22 (45.8)	32 (66.7)	16 (33.3)
Female	26 (35.1)	48.72± 11.73	17(65.4)	09 (34.6)	21 (80.8)	05 (19.2)
Total	74 (100)	51.62±10.64	43(58.1)	31(41.9)	53 (71.6)	21 (28.4)

Table No.3: Distribution of Diabetic and Non-Diabetic Cases with Type of Stroke

Study Population	Diabetic Cases			Non- Diabetic Cases		
	Number of Cases	Ischemic Stroke	Hemorrhagic Stroke	Number of Cases	Ischemic Stroke	Hemorrhagic Stroke
Total	43 (100)	34(79.1)	09 (20.1)	31 (100)	19 (61.3)	12 (38.7)
Male	26 (60.5)	20 (77)	06 (23)	22 (71)	12 (54.5)	10 (45.5)
Female	17 (39.5)	14(82.4)	03 (17.6)	09 (29)	07 (77.8)	02 (22.2)
Survive	29	28	01	25	14	11
Death	14	06	08	06	05	01

Table No.3: Outcome in Terms of Mortality (n=74)

Diabetes Status	Total Number of Cases	Type of Stroke	No of Cases	Male	Female
Diabetic	14 (18.9%)	Ischemic	06	02	04
		Hemorrhagic	08	06	02
Non-Diabetic	06 (8.1%)	Ischemic	05	04	01
		Hemorrhagic	01	00	01
Total	20 (27%)		20	12	08

Table No.4: Outcome in Terms of Survival (n=74)

Diabetes Status	Total Number of Cases	Type of Stroke	No of Cases	Male	Female
Diabetic	29 (39.2%)	Ischemic	28	18	10
		Hemorrhagic	01	00	01
Non-Diabetic	25 (33.8%)	Ischemic	14	08	06
		Hemorrhagic	11	10	01
Total	54 (73%)		54	36	18

DISCUSSION

Prevalence of Diabetes Mellitus is increasing so are its complications mainly vascular thus cerebrovascular accidents. We found 58% diabetic cases, most of the patients were not aware of their illness about diabetes, and were diagnosed during investigations, similar results were also observed by other researchers in

which majority (>50%) of stroke cases were having diabetes[17]. We noticed that diabetes was more prevalent in female patients in which 17 (65.4%)cases were diabetic as compare to males in which diabetes was diagnosed in 26 (54.3%) cases, these results confirms the values of other studies who found that diabetes is more common in female patients of stroke, as the diabetes increases the risk of stroke due to increased atherogenic risk within intra and extracranialartries and due to tendency of hyperglycemia[18,19].

Majority of cases (71.6%) in current study were diagnosed as ischemic stroke, this finding was in consistent with other national and international data[20,21], from these cases of ischemic stroke majority (64.2%) of cases were proven diabetic, confirming the results of other studies who detect that the ischemic strokes are more frequent in diabetic patients[14,16].

In our study the outcome of stroke in terms of mortality in study population was 27%, the reported range of stroke mortality is 11-30%[17,22-24].We observed 18.9% death in diabetic patients with stroke as compare to 8.1% death in non-diabetic cases, this correlates with other studies[25]confirming that diabetes has negative impact on stroke outcome.

CONCLUSION

The ischemic strokes are more prevalent than hemorrhagic strokes especially in diabetic patients. The mortality rate was worse in cases of diabetes especially in hemorrhagic strokes. There is a need of early diagnosis and treatment of diabetes to avoid stroke and to improve prognosis in stroke.

Author's Contribution:

Concept & Design of Study:	Shamsuddin Shaikh
Drafting:	Syed Qaiser Husain Naqvi
Data Analysis:	Jawaid Hussain Lighari
Revisiting Critically:	Shamsuddin Shaikh, Syed Qaiser Husain Naqvi
Final Approval of version:	Shamsuddin Shaikh

Conflict of Interest: The study has no conflict of interest to declare by any author.

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