

**CLINICAL PROFILE, RISK FACTORS AND OUTCOME OF STROKE PATIENT AT A  
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**ABSTRACT**

**Aim of study:** To determine the risk factors and pattern of stroke at a tertiary care unit, Multan **Methodology:** It is a cross-sectional observational study, conducted at Nishtar Hospital, Multan. Duration of study was 6 month May 2017 to October 2017, total 94 patients were enrolled in the study through random sampling technique. Patients with age above 20 and after diagnosing with thorough investigations were selected, ruling out other causes of similar sign and symptoms. History, examination, investigation, medication used and follow up of patient were noted for each patient. Statistical analysis was done with the help of SPSS version 18.0. **Results:** Total 94 patients were enrolled in the study. 64 (68%) were males and 30 (32%) female. 13 patients were in age group 20-40 years, 10 patients in 41-50 years, 18 patients in 51-60 years age group, 36 patients in 61-70 years age group and 17 patients were having age more than 70 years. The mean age was  $54.2 \pm 5.5$  years. 69 patients were diagnosed ischemic stroke and remaining were having hemorrhagic stroke. The most common sign and symptoms observed in patients were loss of conscious in 31 patients, facial palsy in 12 patients, 66 patients with weakness of any of limbs, 16 with severe headache and 29 were having vomiting at the time of presentation. When we evaluated the risk factors we found that 52 patients were hypertensive and most of them non-compliance with medication. 47 patients were having diabetes mellitus. When we analyzed the results of lipid profile of the patients we found that 60 were having dyslipidemia, 40 patients smoker, 37 patients were overweight/obese. 64 patients were having more than one risk factors. At presentation 10 patients were having  $GCS \leq 8$ , 28 patients were having  $GCS 9-12$  and 56 patients having  $GCS 13$  or above. We observed complete recovery in sign and symptoms of 10 patients at the time of discharge, partial recovery in 32 patients and no recovery in 47 patients and 5 patient died during hospital stay mainly due to aspiration pneumonia. The mean hospital stay was  $5.3 \pm 1.8$  days. We called these patients for regular follow up and after 30 days we found that there was complete recovery in 21 patients, partial recovery in 50 patients, no recovery in 10 patients, 10 patients readmitted due to some complication and 3 patient died at home during this duration. **Conclusion:** The present study showed that Hemorrhagic stroke (73%) was more than the ischemic stroke (27%). Male were more as compared to female. Common age group was 61-70 years. Almost 50% patient recovered in 30-40 days. The most common presenting complaint was weakening of limbs. There is need to conduct multicenter studies in order to evaluate the risk factors and clinical profile

**KEYWORDS:** Determine, hemorrhagic stroke, facial palsy.**INTRODUCTION**

According to WHO, stroke is a clinical syndrome characterized by rapidly developing clinical sign and symptom focal or global loss of cerebral function with symptom lasting more than 24 hours or leading to death with no apparent cause other than that of vascular origin. Stroke is the second most common cause of death worldwide and third leading cause in developing world.<sup>[1]</sup> It is generally most prevalent in fifth or sixth decade of life. Stroke is a devitalizing illness making thousand disabled and leading a significant portion of patient to death worldwide Stroke or cerebrovascular

events mainly due to ischemic or hemorrhagic origin. Ischemic causes may be due to an obstruction within the blood vessel that supplies blood to the brain and hemorrhagic stroke occurs due to the weakening of blood vessel which would rupture and bleed to the surrounding brain tissue. In west hemorrhagic stroke accounts for 10-13% but in Asian countries has been reported as high as 21.4-27.5%.<sup>[2,3]</sup> Unfortunately majority of people are unaware of their co-morbid situations this is probably due to lack of awareness for routine medical checkup, availability of screening services for endemic diseases and ignorance on the part of community regarding

personal health care. In Pakistan there is lack of epidemiological studies on stroke, such studies can help us to determine the natural history of disease and to identify the risk factors that can lead to better knowledge of the markers of disease mechanism. There are some modifiable and some non-modifiable risk factors of stroke e.g. among non-modifiable risk factors are Age, race, gender, family history and previous CVA events. Modifiable risk factor includes hypertension, diabetes, coronary artery disease, atherosclerosis, smoking, vasculitis, contraceptive use, migraine and pregnancy etc. According to recently published article, Pakistan currently has enormous proportion of its population suffering from hypertension, diabetes or both.<sup>[4,5]</sup> In a National health survey, it was identified that 33% prevalence of hypertension in adult population, 2 million diabetic and 20% of the population is smoker.<sup>[6]</sup> According to study in Pakistan, alarmingly more than 70% of people with hypertension are unaware of their condition and less than 3% had adequately controlled blood pressure.<sup>[7]</sup> And 25% of Pakistani population is overweight/obese according to Asian specific BMI cutoff value of 23kg/m<sup>2</sup>. American stroke association recommends tissue plasminogen activator, antiplatelet (aspirin, clopidogrel), anticoagulant (heparin), antihypertensive, and lipid lowering for treatment of ischemic origin stroke whereas osmotherapy, neuromuscular relaxant, neuroprotectin and calcium channel blocker for hemorrhage.<sup>[11-16]</sup> The aim of this study is to help us formulate strategic management protocol for stroke and knowing which individual, communities are at risk of stroke this all would help physician and public health policy makers to build more efficient programs to diminish the risk of stroke.

## METHODOLOGY

The study was carried out for a period of 6-month from May 2017 to October 2017 at a tertiary care unit Nishtar hospital, Multan. 94 patients were enrolled in the study through random sampling technique. The patient information was collected and analyzed by reviewing case files and patient interview. Patients diagnosed with Ischemic and hemorrhagic stroke with or without comorbid disease, age above 20 years and of both genders were included in the study. The demographic data such as age, gender, risk factors (lifestyle, diet, body mass index, educational and socioeconomic status, resident areas, previous, hypertension, diabetes mellitus, coronary artery disease, prestroke disability, smoking and family history), onset of stroke were noted. Routine hematological and biochemical tests including Hb, total leukocyte count, erythrocyte sedimentation rate, blood sugar, and lipid profile were done. Electrocardiogram (ECG), echocardiography, and carotid Doppler study were done in all patients). Informed consent was taken from the cases that were willing to participate in the study. Ethical approval letter for this study was taken from ethical review committee of Institution. Data was analyzed using SPSS 18.0 version.

## Inclusion Criteria

1. Subjects aged older than 20 years.
2. The diagnosis of acute stroke (ischemic/hemorrhagic) based on clinical evaluation and imaging (computed tomography [CT]-head.

## Exclusion Criteria

1. Patients with stroke-like conditions due to systemic diseases such as infections and trauma
2. Patients in whom the whole investigation protocol was not possible.
3. Patient having an alternate diagnosis on computed tomography (CT) brain scan like space occupying lesion (mass/tuberculoma/ neurocysticercosis etc.), anoxic-ischemic brain injury following cardiac arrest, or patients with traumatic intracranial hemorrhage
4. History of malignancy or psychiatric illness.
5. Patient having hepatic, uremic, toxic or metabolic encephalopathy.
6. Refusal to consent.

## RESULTS

Total 94 patients were enrolled in the study. 64 (68%) were males and 30 (32%) female, with male to female ratio of 2.1:1. All the patients were divided in different age group. 13 patients were in age group 20-40 years, 10 patients in 41-50 years, 18 patients in 51-60 years age group, 36 patients in 61-70 years age group and 17 patients were having age more than 70 years. The mean age was 54.2±5.5 years. Among 94 patients, 69 patients were diagnosed ischemic stroke and 25 patient were having hemorrhagic stroke. The most common sign and symptoms observed in patients were, drowsiness was present in 10 patients, altered sensorium in 31 patients, 12 patient presented with facial palsy, 66 patients with weakness of any of limbs, 16 with severe headache, 29 were having vomiting, 7 with slurred speech, 5 were having convulsion/seizures and 18 patients were having fever at the time of presentation. When we evaluated the risk factors we found that 52 patients were hypertensive. Out of these 52, 5 were taking medication with compliance and remaining either were non-compliant or unaware of their underlying illness. 47 patients were having diabetes mellitus and only 6 patients were compliant with their medication. When we analyzed the results of lipid profile of the patients we found that 60 were having dyslipidemia, 40 patients smoker, 37 patients were overweight/obese, 10 patients were known case of ischemic heart disease, 7 patients were having dysrhythmias at presentation on ECG, 5 patients presented with recurrent CVA. 64 patients were having more than one risk factors. At presentation 10 patients were having GCS ≤ 8, 28 patients were having GCS 9-12 and 56 patients having GCS 13 or above. We observed complete recovery in sign and symptoms of 10 patients at the time of discharge, partial recovery in 32 patients and no recovery in 47 patients and 5 patient died during hospital stay mainly due to aspiration pneumonia. The mean hospital stay was 5.3±1.8 days. We called these

patients for regular follow up and after 30 days we found that there was complete recovery in 21 patients, partial recovery in 50 patients, no recovery in 10 patients, 10 patients readmitted due to some complication and 3 patient died at home during this duration.

**Table 1: Age and gender distribution among stroke patients at our hospital.**

Age group	Male	Female	Total
20-40 years	8	5	13
41-50 years	4	6	10
51-60 years	12	6	18
61-70 years	26	10	36
71 years and above	14	3	17

**Table 2: Clinical sign and symptoms among 94 stroke patients.**

Signs and symptoms	No. of patients	Percentage
Drowsiness	10	10.6%
Altered sensorium	31	32.9%
Facial palsy	12	12.7%
Weakness of limbs	66	70%
Headache	16	17%
Vomiting	29	30.8%
Slurred speech	7	7.4%
Seizure/fits	5	5.3%
Fever	18	19.14%

**Table 3: Distribution of hemorrhagic vs. ischemic stroke among 94 patients.**

Type	Male	Female	Total
Ischemic stroke	47	22	69 (73.4%)
Hemorrhagic stroke	17	8	25 (26.5%)

**Table 4: Risk factors of stroke among 94 selected patient.**

Risk factors	No. of patients	Percentage
Hypertension	52	55.31%
Dyslipidemias	60	63.8%
Diabetes mellitus	40	42.5%
Smoking	37	42.5%
Overweight/obese	37	39.36%
Ischemic heart disease	10	10.6%
Dysrhythmias	7	7.4%
Vulvular heart disease	5	5.3%
Recurrent CVA	5	5.3%
Coagulopathy	3	3.1%

**Table 5: GCS at the time of presentation.**

GCS	No. of patients
1-8	10
9-12	28
13-15	56

**Table 6: Outcome of stroke in 94 patients.**

Outcomes	At the time of discharge	After 30 days
Complete recovery	10 patients	21 patients
Partial recovery	32 patients	50 patients
No recovery	47 patients	10 patients
Death	5 patients	3 patients

## DISCUSSION

Developing countries accounts for 85% of global deaths due to stroke and 15 to 30 % of stroke patients are permanently disabled.<sup>[12]</sup> In this study we found that male patients are more as compared to female which is similar to many studies.<sup>[13,14]</sup> Male gender is considered itself independent risk factor of stroke. Similarly in a study, male predominance was present and similar findings were observed in Anand et al, Nagaraja et al and Marwat MA *et al.*; study.<sup>[15,16]</sup> In almost all age groups, stroke is more common in men than in women,<sup>[17,18]</sup> The most common age group in our study was 61-70 years and these results are similar to many studies done in Pakistan,<sup>[19]</sup> but many studies have shown that in Asian countries stroke occur in patients at younger age as compared to western countries.<sup>[20,21]</sup> We found that in our study the major risk factor was dyslipidemias in 63.8% patients followed by hypertension in 55%, diabetes in 50%. These results are similar to a study done by Kameelt at el 2007 but different to many other studies done in Pakistan and worldwide.<sup>[22]</sup> Another study showed that hypertension and its level was the most important potential risk factor for both stroke subtype, particularly for intra-cerebral hemorrhagic stroke.<sup>[23]</sup> In this study we found that young female were more as compared to young male patient this may be due to pregnancy induced coagulopathy. In this study we found that ischemic stroke was more as compared to hemorrhagic stroke. This is consistent with the reported proportion of ischemic stroke of 68% from community-based studies to 80% from hospital-based study.<sup>[24,25]</sup> Among sign and symptoms, most of the patients were presented with weakness of whole side of the body, in our study we found that 70% patients were having left sided weakness. 32% patients presented with altered sensorium in the form of irrelevant talk, drowsiness, irritability, not following commands etc. In our set basic protocol of management for stroke patient is almost same as hospital provides free of cost treatment to all the patients. First off all patient is resuscitated and then CT scan is done to rule out hemorrhagic stroke. In ischemic stroke aspirin, clopidogrel, heparin, mannitol, anti-convulsant, statins, fluid, antibiotic, anti-hypertensive and hypoglycemic drugs are used according to the need and severity of symptoms. On the other hand in hemorrhagic stroke same protocol is followed expect use of aspirin, clopidogrel and anticoagulant which is contraindicated. A calcium channel blocker nimodipine is widely used globally in hemorrhagic stroke. The mortality rate of stroke was 5.3% during hospital stay. An obvious limitation of our studies is Apo lipoproteins.

Waist/hip ratio, body mass index, diet physical activity and abdominal obesity have not been investigated as risk factors and their clustering in stroke as have been observed in previous studies. Diet has association with stroke.<sup>[26]</sup>

## CONCLUSION

The present study showed that Hemorrhagic stroke (73%) was more than the ischemic stroke (27%) and age was the common non modifiable risk factor. The most common modifiable risk factors was dyslipidemia followed by hypertension, diabetes and smoking. The common presenting complaints were weakness of limbs, drowsiness, vomiting, slurring of speech, headache, and deviation of angle of mouth Stroke causes great morbidity and mortality and consume lot of resources and man power. There is need to conduct multicenter studies in order to evaluate the risk factors and clinical profile.

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