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Research Article

An Observational study of clinical profile and outcome of Stroke patients in a peripheral ICU setup.

Dr. Bapdhan Dehingia[1], Dr. Debashri Bora[2], Dr. Ongcham Shyam[3], Dr. Diganta Bora[4]

1. Assistant Professor, Dept of Anaesthesiology, Lakhimpur Medical College and Hospital,
2. Assistant Professor, Dept of Pharmacology, Lakhimpur Medical College and Hospital,
3. Assistant Professor, Dept of PMRT, Lakhimpur Medical College and Hospital,
4. Associate Professor, Dept of Anaesthesiology, Lakhimpur Medical College and Hospital.
(Corresponding Author)

Abstract

Stroke or Cerebrovascular accident (CVA) is one of the leading cause of morbidity, mortality and disability in the whole world. It is estimated that around 12 million people are affected and around 6 million deaths occurs annually due to stroke.[1-2] In this study, we will be studying the clinico epidemiological profile of stroke patients admitted in ICU.

Aim of our study is to retrospectively study and observe the epidemiological and clinical profile along with the outcome of stroke patients admitted over a period of one year in the ICU of a peripheral medical college in Lakhimpur, Assam.

Methods : After obtaining approval from institutional ethical committee, data was collected from medical records department of ICU, Lakhimpur Medical College and Hospital. Data was collected from 1st Jan 2025 to 31st Dec 2025. Our study included 83 patients, presenting with stroke or stroke like symptoms. Out of which, 52 patients were confirmed by CT brain, while 31 patients presented with stroke like symptoms. The demographic and socioeconomic profile of the patients were collected.

Results: In our study, a total of 773 patients were admitted in ICU, in the period of 1 years. Total 83 (10.7 %) patients had suffered from CVA like symptoms. Out of which 38 (45.7%) number of patients were confirmed for hemorrhagic and 14 (16.7%) were ischemic in nature. Rest 31 (37.3%) patients could not do any investigation due to various reasons. Males were predominantly affected than females with 56 (67.4%) and 27 (32.5%) respectively. 37 (66%) of 56 male patients were confirmed of hemorrhagic stroke vs 15 (55.5%) of 27 in females.

Out of 83 patients, 8 (9.6%) patients recovered well and were shifted to medicine ward, 23 (27.7%) patients were referred to centre with neurosurgical care. 25 (30.1%) patients demanded leave against medical advice (LAMA). And mortality rate was 27 (32.5%).

Introduction : Stroke is the second leading cause of death. It carries a significant personal, social and financial global burden.[3] Incidence of stroke is higher in developing countries than in developed countries.[4]

Stroke has been conventionally defined as a neurological deficit of cerebrovascular origin persisting beyond 24 hours or resulting in death within 24 hours, covering subtypes like ischemic stroke, hemorrhagic stroke, transient ischemic attack.[5] However, this definition has faced scrutiny due to an improved understanding of the disease process. The term "stroke" should be broadly used to include all of the following:

Definition of CNS infarction: CNS infarction is brain, spinal cord, or retinal cell death attributable to ischemia, based on

1. pathological imaging, or other objective evidence of cerebral, spinal cord, or retinal focal ischemic injury in a defined vascular distribution; or

2. clinical evidence of cerebral, spinal cord, or retinal focal ischemic injury based on symptoms persisting ≥24 hours or until death, and other etiologies excluded.

Definition of ischemic stroke: An episode of neurological dysfunction caused by focal cerebral, spinal, or retinal infarction. Definition of silent CNS infarction: Imaging or neuropathological evidence of CNS infarction, without a history of acute neurological dysfunction attributable to the lesion.

Definition of intracerebral hemorrhage: A focal collection of blood within the brain parenchyma or ventricular system that is not caused by trauma. Definition of stroke caused by intracerebral hemorrhage: Rapidly developing clinical signs of neurological dysfunction attributable to a focal collection of blood within the brain parenchyma or ventricular system that is not caused by trauma.

Definition of silent cerebral hemorrhage: A focal collection of chronic blood products within the brain parenchyma, subarachnoid space, or ventricular system on neuroimaging or neuropathological examination that is not caused by trauma and without a history of acute neurological dysfunction attributable to the lesion. Definition of subarachnoid hemorrhage: Bleeding into the subarachnoid space (the space between the arachnoid membrane and the pia mater of the brain or spinal cord). Definition of stroke caused by subarachnoid hemorrhage: Rapidly developing signs of neurological dysfunction and/or headache because of bleeding into the subarachnoid space (the space between the arachnoid membrane and the pia mater of the brain or spinal cord), which is not caused by trauma.

Symptoms or signs caused by reversible edema without infarction or hemorrhage do not qualify as stroke. Definition of stroke, not otherwise specified: An episode of acute neurological dysfunction presumed to be caused by ischemia or hemorrhage, persisting ≥24 hours or until death, but without sufficient evidence to be classified as one of the above.[5]

Despite this, the benefit of ICU admission of stroke patients remains controversial. It has been previously reported that there was no significant reduction in mortality and morbidity following admission of stroke patients in the ICU.[6–9] In most cases, ICU admission has been found only to prolong patients' inevitable demise after an episode of severe stroke.[10]

In our study, we observed the demographic characteristics, course, of all stroke patients admitted in ICU of Lakhimpur Medical College and Hospital, from Jan 2025 to Dec 2025. We also observed the type of stroke (Ischemic or Haemorrhagic), outcome of the patient, and the duration of stay in ICU.

Aim - the aim of our study is to observe the demographic profile, clinical course and outcome of all stroke patients admitted in ICU.

Objectives - the objective of our study is to evaluate the CVA patients with respect to age, sex, type of CVA (ischemic or haemorrhagic), duration of stay, and outcome among the patients admitted in the ICU, Lakhimpur Medical College.

Methodology : After obtaining Institutional ethical clearance, data was collected from medical records department of Lakhimpur Medical College. The total number of patients admitted in ICU from 1st Jan, 2025 to 31st Dec, 2025 was found to be 773. Among those patients, a total of 83 patients were admitted with stroke like symptoms. The demographic profile of the patients were collected in respect to age, sex, type of stroke, duration of stay and outcome.

Inclusion criteria

1. Newly diagnosed stroke patient with CT/MRI reports

2. Patients with symptoms of sudden onset (< 24 hours) neurological dysfunctions like aphasia, hemiplegia or hemiparesis, change in consciousness, persisting for > 24 hours.

Exclusion criteria

1. Patients with previous history of stroke

2. Patients with history of Trauma to the brain

Results :

In our study, a total of 773 patients were admitted in ICU, in the period of 1 years, viz 1st Jan, 2025 to 31st Dec, 2025. Total 83 (10.7 %) patients had suffered from stroke like symptoms. Males were predominantly affected than females with 56 (67.4%) and 27 (32.5%) respectively. The age distribution of patients were from (31 - 86) years in males and (42 - 90) years in females. Majority of males (17) in the age group of (51-60) were affected and in females (18) from (61-80) age group.

Out of 83 patients, 52 (62.6%) number of patients (37 males and 15 females) were confirmed by CT Brain report. Rest 31 (37.3%) patients could not do any investigation due to various reasons. Majority of them, 38 (73%) presented with hemorrhagic stroke and 14 (26.9%) ischemic. Out of 37 male patients, 18 were found to have intracerebellar hemorrhage, 13 subarachnoid and 6 ischemic stroke. And in females, 4 were intracerebellar, 3 subarachnoid and 8 ischemic strokes as per CT reports.

Among all patients with stroke, 27 (32.5%) had history of Hypertension, 9 (10.8%) suffered from type 2 Diabetes Mellitus and 5 (6%) were suffering from Chronic kidney disease.

The average duration of stay of patients were 6 days, with longest being of 22 days.

Out of 83 patients, 8 (9.6%) patients recovered well and were shifted to medicine ward, 23 (27.7%) patients were reffered to centre with neurosurgical care. 25 (30.1%) patients demanded leave against medical advice (LAMA). And 27 (32.5%) patients succumbed to death.

Table 1. Age distribution of patients admitted in ICU with stroke

Age Group (years)	male	female	total
31-40	8	0	8 (9.6%)
41-50	5	1	6 (7.2%)
51-60	17	2	19 (22.8%)
61-70	11	9	20 (24%)
71-80	7	9	16 (19.2%)
> 80	8	6	14 (16.8%)
	56 (67%)	27 (32.5%)	

Figure 1. Age distribution

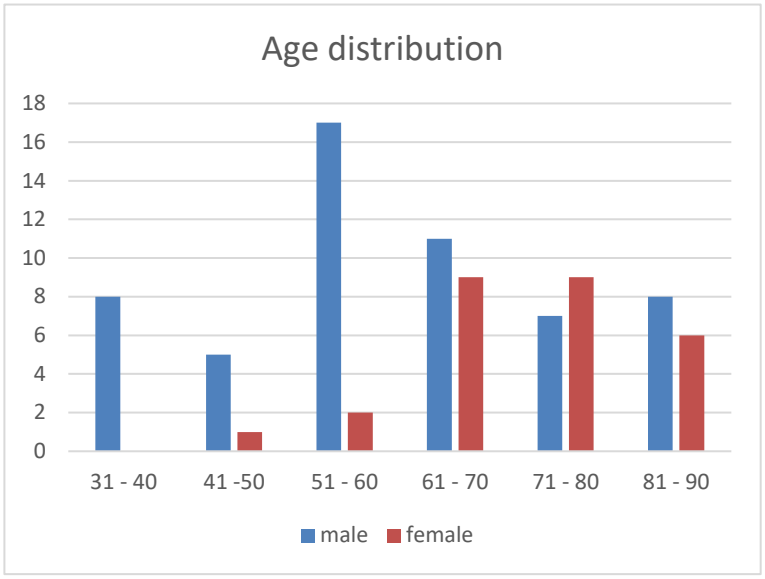


Figure 2. Gender distribution

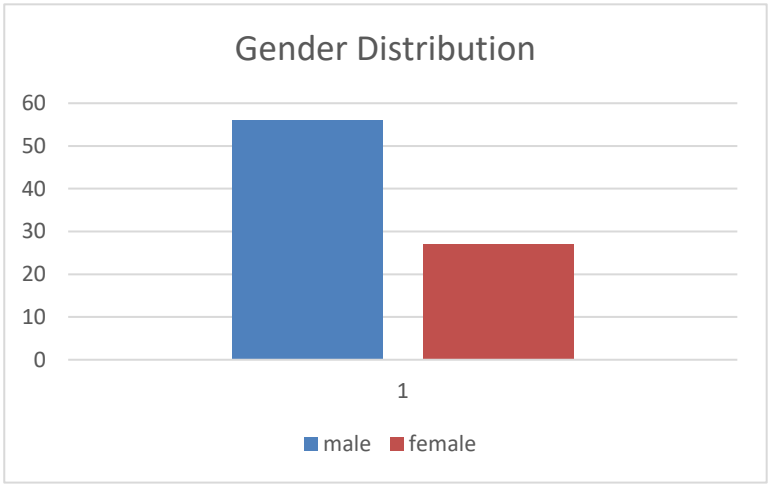


Table 2. Type of stroke

	Intracerebellar hemorrhage	Subarachnoid hemorrhage	Ischemic	Not Available
Male	18	13	6	19
Female	4	3	8	12

Figure 3. Type of stroke

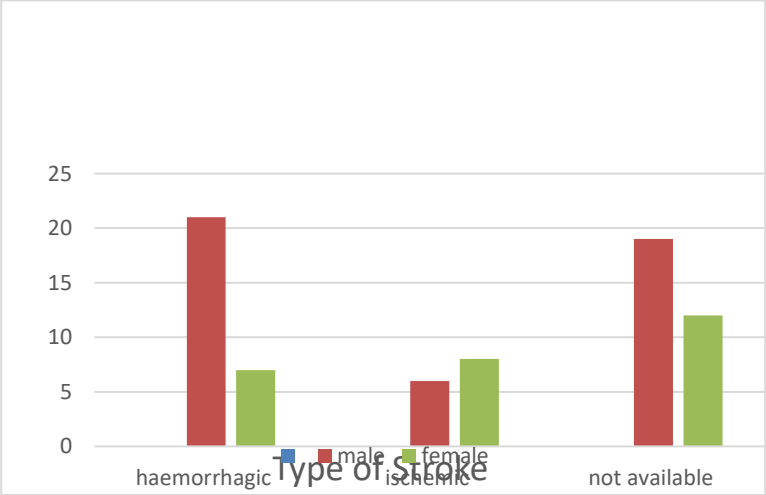


Figure 4. Associated Comorbidities

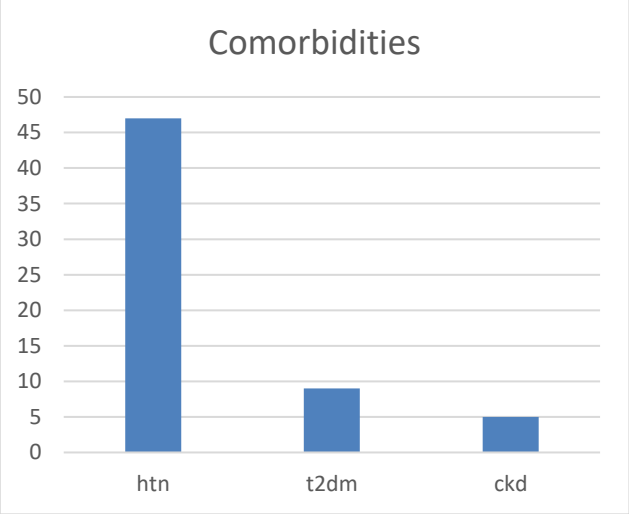
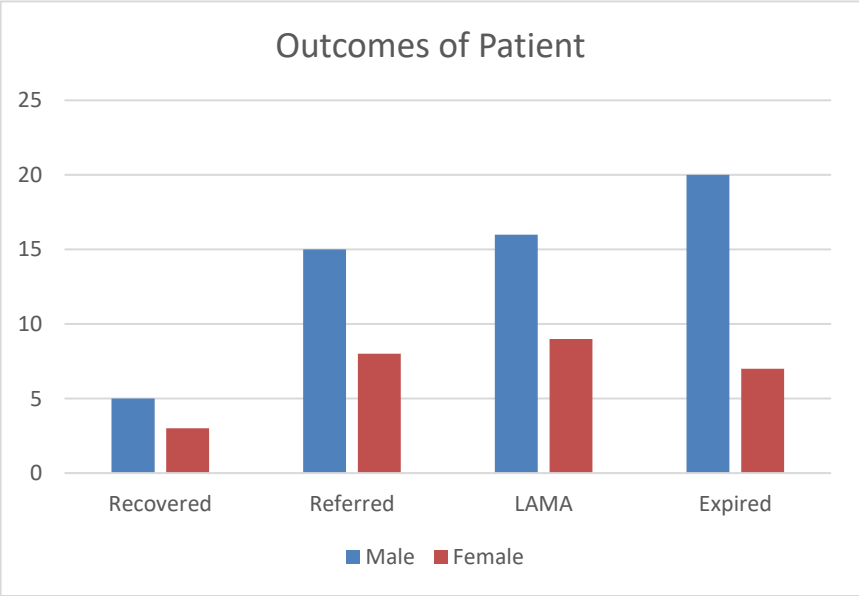


Table 3. Outcome of patients

	Shifted to ward	Referred	LAMA	Expired
Male	5	15	16	20
Female	3	8	9	7
	8	23	25	27

Figure 5. Outcome of Patients



Discussions : In our study, a total of 773 patients were admitted in ICU. 83 (10.7 %) patients among them suffered from stroke (confirmed by CT) or stroke like symptoms with neurological deficit. Males were predominantly affected than females with 56 (67.4%) and 27 (32.5%) respectively. The age distribution of patients were from (31 - 86) years in males and (42 - 90) years in females. Majority of males (17) in the age group of (51-60) were affected and in females (18) from (61-80) age group.

Our findings correlate with Gujjar et al[11] , with males affected with 69.7% and females with 30.32%; and Patne et al[12], with males (58.53%) more than females (41.46%). Aiyar et al[13], Vaidya et al[14] also concluded with higher incidence in males.

The most common age group in our study was (61-70) with 24%, followed by (51-60) with 22.8%. This findings correlates with the study findings of Choudhary Dhrubajyoti et al[15], Maskey et al[16] and Vaidya et al[14].

Mahanta B.N et al[17], Choudhary Dhrubajyoti et al[15], had found hemorrhagic stroke to be more prevalent than ischemic stroke in the north eastern region of India. We also found hemorrhagic stroke to be more common than ischemic stroke, unlike in other part of the world.[13-14]

In our study Hypertension (56.6%) is the most common comorbidity for stroke which correlates with the study done by Patne et al[12] (48.78%) ,Abdu-Alrhaman Sallam et al[17] (67%), and Choudhary Dhrubajyoti et al[91] (89.51%). The second most common associated comorbidity was Type2 DM (10.8%). Our finding is similar to Vaidya et al[13] with 9.3%.

According to a systemic review done by Stephanie P Jones et al[18], one month case fatality rates ranged from (18-42)%. We found the mortality rate to be 32.5%.

Conclusions : In our study, conducted over a period of one year, we found that males in the age group of 51-60 with hypertension are more prone to stroke. Hemorrhagic (Intracerebellar) stroke being more common than ischemic subtypes in our ICU setup.

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