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The Study of Clinical Profile of Stroke Patients Presenting in Tertiary Care Hospital

Maram Mahitha[1] , P.B.Palange[2], Vaibhav Janardhan Zod[3],Abrar Abdulnaim Shaikh[4]
[1] Junior Resident,[2] Professor And Guide,[3] Senior Resident,[4] Junior Resident,
Department Of General Medicine,
Bharati Vidyapeeth (Deemed To Be University) Medical College And Hospital,Sangli.

***Corresponding Author:**
Dr. Maram Mahitha
Junior Resident Department Of General Medicine, Bharati Vidyapeeth (Deemed To Be University) Medical College And Hospital, Sangli, India-416414

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Abstract

Stroke is the second leading cause of death and third most common cause of disability-adjusted life years in the world. NIHSS is a systematic tool that provides quantitative measurement of stroke related neurological deficit. Diagnosis of stroke is not always easy. A variety of conditions can mimic TIA or stroke. Seizures, neoplasms, infection, intracranial hemorrhage, as well as hypoglycemia and other metabolic abnormalities are among the conditions that can simulate a TIA and stroke . So keeping these in mind National Institutes of Health stroke Scale (NIHSS) was tested in patients presenting with stroke in ED was found to be useful not only in diagnosing stroke but also to stratify patients so that outcome could be predicted and also to select those patients who will benefit from acute intervention.

Results: In the present study most of the cases were seen having age more than 65 years of age. Out of 37 (74%) male cases, 8.11% cases were between 18 to 35 years of age, 16.22% cases had age from 36 to 50, 40.54% cases had age from 51 to 65 years and 32.43% cases had age more than 65 years. Out of 13 (26%) female cases 7.6% cases were between 18 to 35 years of age, 15.38% each cases were seen having age from 36 to 50 years of age and 51 – 65 years of age respectively, 69.23% cases had age more than 65 years of age. 60.78±15.22years mean age was observed and Male cases were predominantly higher than female cases with M:F ratio of 2.85:1. Giddiness was present in 26% cases, Limb weakness was seen in 62% cases, 42% cases were observed with slurring of speech, 38% cases were seen with Altered level of consciousness and 4% cases had convulsions. Out of 50 cases 42 (84%) cases were seen with Ischemic stroke where 8 (16%) cases were seen with Hemorrhagic stroke. Out of 50 cases On admission mean 16.88 NIH stroke scale was observed and on discharge it was reduced to mean 1.20.

Conclusion: NIHSS score on day of admission predicts the outcome of patients with stroke. NIHSS score on day of admission can be useful in selecting patients for whom early intervention will be beneficial.

Keywords: NIHSS. Stroke

Introduction

Stroke is the third most common cause of disability and the second most common cause of death worldwide. [1]

Over the past three decades, stroke incidence has increased by 2 times in low and middle-income countries while falling by 42% in high-income nations. [2,3]

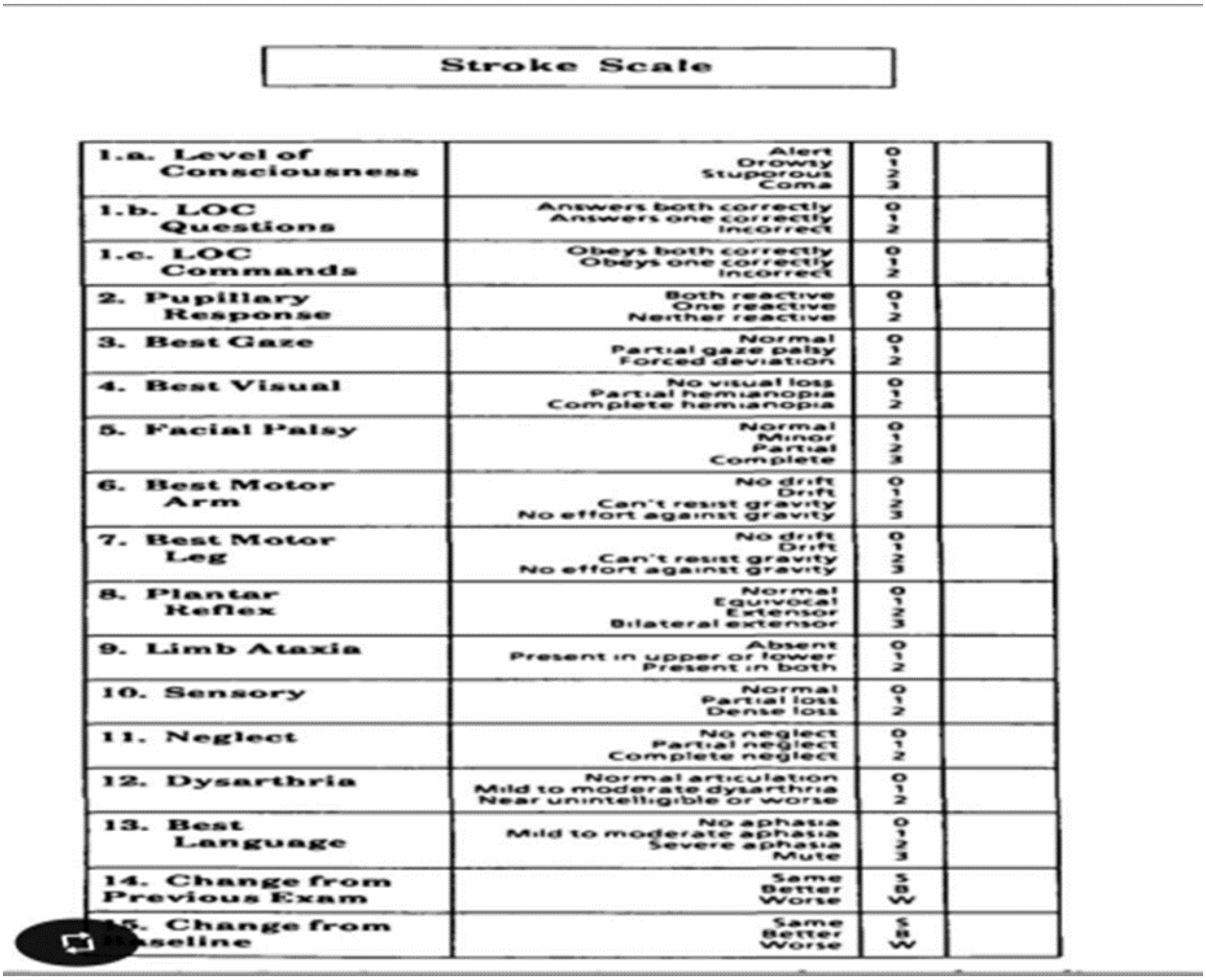
Because it includes an abrupt assault to the brain, a stroke, often known as a "brain attack," is a serious disability. [4]

THOMAS BROTT et al (1) first designed the original scale in 1989 as 15-item neurologic examination stroke scale for use in acute stroke therapy trials for measurement of acute cerebral infarction.

It consists of 15 test items. On studying this scale it was found that the most interrater reliable item (pupillary response) had low validity.

While less reliable items such as upper or lower extremity motor function were more valid.

1st Neurological examination scale introduced by DR THOMAS BROTT, later it has been reviewed by many other doctors and was changed to NIHSS by National institute of health.



Stroke Scale

1.a. Level of Consciousness	Alert Drowsy Stuporous Coma	0 1 2 3	
1.b. LOC Questions	Answers both correctly Answers one correctly Incorrect	0 1 2	
1.c. LOC Commands	Obeys both correctly Obeys one correctly Incorrect	0 1 2	
2. Pupillary Response	Both reactive One reactive Neither reactive	0 1 2	
3. Best Gaze	Normal Partial gaze palsy Forced deviation	0 1 2	
4. Best Visual	No visual loss Partial hemianopia Complete hemianopia	0 1 2	
5. Facial Palsy	Normal Minor Partial Complete	0 1 2 3	
6. Best Motor Arm	No drift Drift Can't resist gravity No effort against gravity	0 1 2 3	
7. Best Motor Leg	No drift Drift Can't resist gravity No effort against gravity	0 1 2 3	
8. Plantar Reflex	Normal Equivocal Extensor Bilateral extensor	0 1 2 3	
9. Limb Ataxia	Absent Present in upper or lower Present in both	0 1 2	
10. Sensory	Normal Partial loss Dense loss	0 1 2	
11. Neglect	No neglect Partial neglect Complete neglect	0 1 2	
12. Dysarthria	Normal articulation Mild to moderate dysarthria Near unintelligible or worse	0 1 2	
13. Best Language	No aphasia Mild to moderate aphasia Severe aphasia Mute	0 1 2 3	
14. Change from Previous Exam	Same Better Worse	S B W	
15. Change from Baseline	Same Better Worse	S B W	

Therefore, the scale was altered by National Institutes of Health (NIH) and is called as NATIONAL INSTITUTES OF HEALTH STROKE SCALE (NIHSS). The NIH Stroke Scale is an 11-item (expandable to 15 items) with 13 specific tests being performed.

This graded neurologic examination stroke scale was used to evaluate the effect of acute cerebral infarction like neurologic outcome and degree of recovery for stroke patients.

NIH stroke score is based on summation of 4 factors.They are right and left motor function and right and left cortical function

The 11 components are:

level of consciousness (1a: 0-3, 1b: 0-2 and 1c: 0-2)

best gaze (0-2)

visual fields (0-3)

facial palsy (0-3)

arm motor (0-4)

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leg motor (0-4)

limb ataxia (0-2)

sensory (0-2)

best language (0-3)

dysarthria (0-2)

extinction and inattention (0-2)

These 11 components are then summed and the score correlates with stroke severity.

0 = no stroke symptoms

1-4 = minor stroke

5-15 = moderate stroke

16-20 = moderate to severe stroke

21-42 = severe stroke

Aims And Objectives

Aim:

To study the clinical profile of stroke patients presenting in tertiary hospital

Objectives:

1. To use NIHSS as a tool to measure the stroke severity at the time of admission and discharge.

2. To observe clinical outcome of all stroke patients based on NIHSS.

3. To evaluate severity and outcome amongst various stroke subgroups using

NIHSS e.g. Hemorrhagic and Ischemic Stroke.

Materials And Methods

It is a descriptive study conducted in Bharati Vidyapeeth (Deemed to be University) Medical College & Hospital, Sangli for the duration of 6 months.

All Stroke patients admitted to Bharti Vidyapeeth (Deemed to be University) Medical College & Hospital, Sangli having age more than 18 years were included in the study.

Exclusion criteria included cases with old Cerebrovascular accident, cases with neurological conditions (cerebral abscess,tumors, CVST ,meningitis, encephalitis, Head trauma, SDH, EDH, stroke mimics, seizures etc.) & patients who were not willing to participate.

Total 50 patients were included in our study

Appropriate permission from the institutional ethical committee was taken.

Patients or relatives were provided with a consent form and conveyed about research protocol.

The patients or relatives who gave the written consent were considered for the study.

A detailed clinical history was taken and thorough clinical examination was performed.

All the relevant investigations were carried out. Care was taken to maintain strict confidentiality and also to maximize the level of comfort while doing the clinical examination and evaluation.

IBM SPSS Version 2.0 software was used for descriptive statistics.

Results

Table 1: Age And Sex Characteristics

Age (years)	Male	Female	Total
18 – 35	3 (8.11%)	1 (7.69%)	4 (8%)
36 – 50	6 (16.22%)	2 (15.38%)	8 (16%)
51 – 65	15 (40.54%)	2 (15.38%)	17 (34%)

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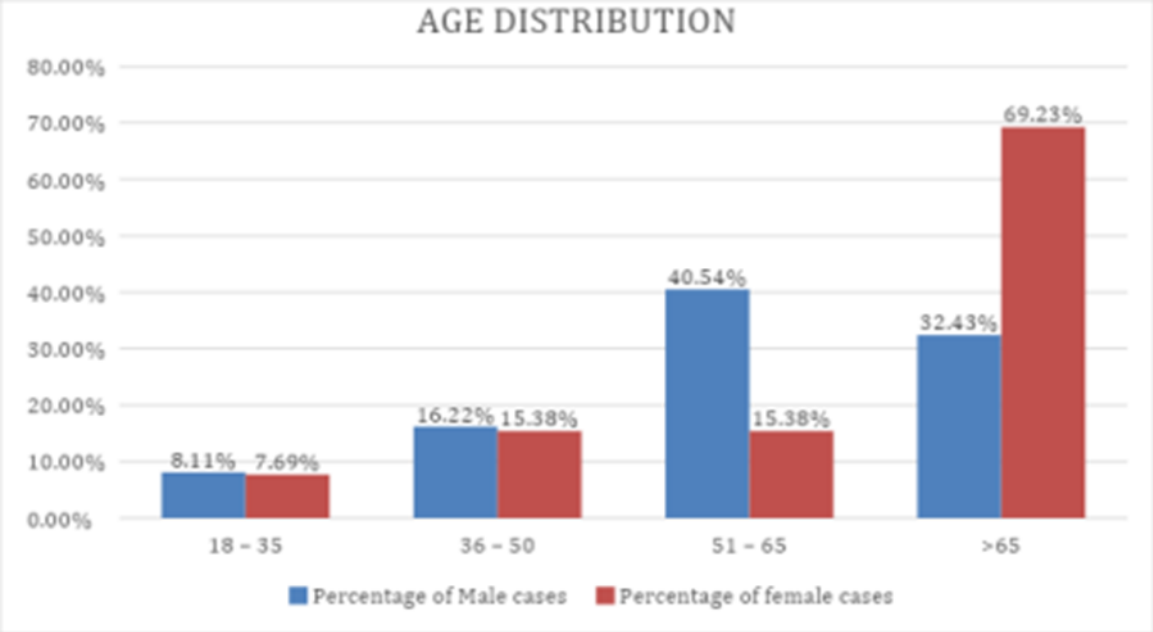
Age (years)	Male	Female	Total
>65	12 (32.43%)	9 (69.23%)	21 (42%)
Total	37 (74%)	13 (26%)	50 (100)



60.78 years mean age was observed and Male cases were predominantly higher than female cases with M:F ratio of 2.8:1

Table 2 Clinical features

CLINICAL FEATURES	TOTAL NO OF PATIENTS
IMBALANCE WHILE WALKING	26% (13)
LIMB WEAKNESS	62% (31)
SLURRING OF SPEECH	42%(21)
ALTERED LEVEL OF CONSCIOUSNESS	38% (19)
CONVULSIONS	4%(2)

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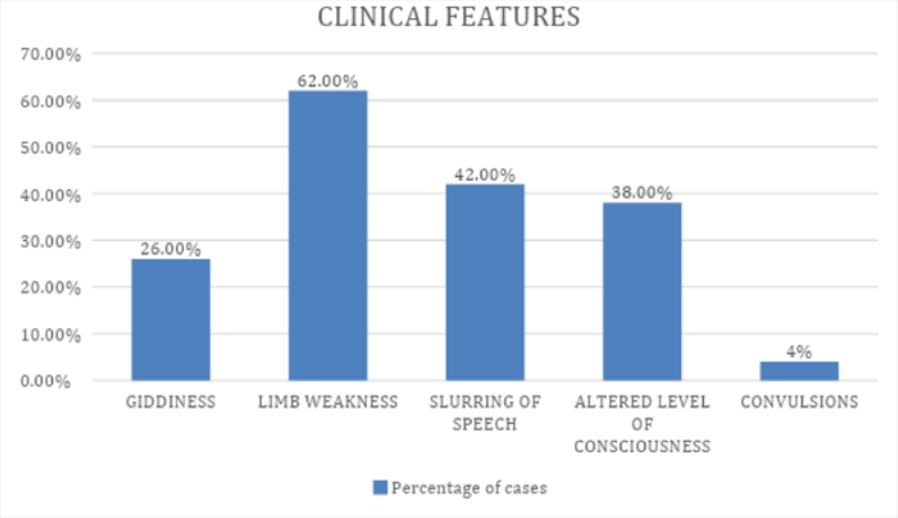
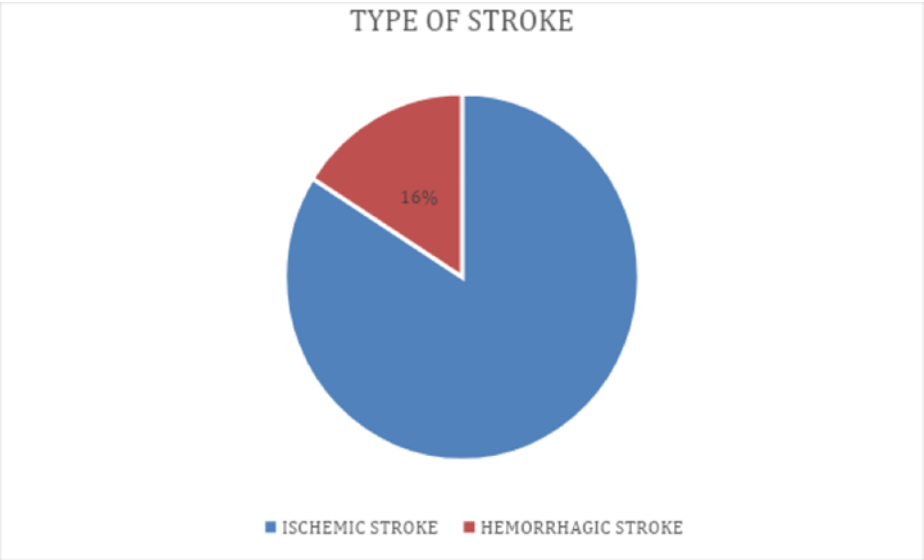


Imbalance while walking was present in 26% cases, Limb weakness was seen in 62% cases, 42% cases were observed with slurring of speech, 38% cases were seen with Altered level of consciousness and 4% cases had convulsions.

Table:3 TYPE OF STROKE

TYPE	TOTAL NO OF PATIENTS
ISCHEMIC STROKE(THROMBOTIC)	82%(41)
ISCHEMIC STROKE(EMBOLIC)	2%(1)
HEMORRHAGIC STROKE	16%(8)



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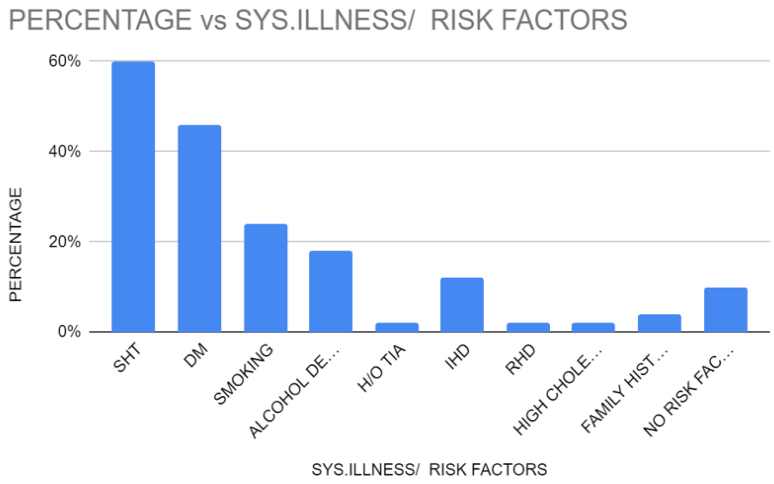
In our study it has been observed ischemic stroke was more compared to hemorrhagic stroke

Table 4: RISK FACTORS FOR STROKE



SYS.ILLNESS/ RISK FACTORS	NUMBER	PERCENTAGE
HYPERTENSION	30	60%
DIABETES MELLITUS	23	46%
SMOKING	12	24%
ALCOHOL DEPENDENCE	9	18%
H/O TIA	1	2%
IHD	6	12%
RHD	1	2%
HIGH CHOLESTEROL	1	2%
FAMILY HISTORY	2	4%
NO RISK FACTORS	5	10%

Table :5 SEVERITY OF STROKE

AGE GROUP	NIHSS <4	NIHSS 5-15	NIHSS >16
	MILD	MODERATE	SEVERE
18-35	2%(1)	4%(2)	2%(1)
36-50	10%(5)	4%(2)	2%(1)
51-65	16%(8)	8%(4)	10%(5)

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>65	**10%(5)**	**12%(6)**	**20%(10)**
Total	**38%(19)**	**28% (14)**	**34%(17)**

In this study it has been observed that as the age increases severity of stroke increases and number of people presenting with stroke also increases, making age as one of risk factor for stroke. In this study 21 cases were seen in age group >65years among which 10cases had NIHSS >16.

TABLE :6 OUTCOME OF PATIENTS WITH STROKE

DISCHARGE STATUS/OUTCOME	**NIHSS<4**	**NIHSS 5-15**	**NIHSS >16**	**TOTAL**
DISCHARGE HOME INDEPENDENT	18	8	3	29
DISCHARGE HOME ASSISTANCE	1	5	10	16
EXPIRED	0	1	4	5
TOTAL	19	14	17	50

Out of 50 cases NIHS score <4 was observed in 19 cases among which 18 were discharged home without any assistance ,and NIHS score 5-15 was seen in 14 cases among which 8 were discharged without any assistance ,NIHS score more than 16 was seen in 17 cases among which 4 cases expired and 10 cases required home assistance

It is observed that NIHS score (moderate and severe) required home assistance for daily activities compared to mild score

Mortality is seen around 8% in score>16,but 0% mortality is observed in mild score ,indicating that increase in score will affect the prognosis as well outcome of the stroke.

Table 7: OUTCOME OF PATIENTS WITH ISCHEMIC STROKE

Total no of cases-42	**NIHSS<4**	**NIHSS 5-15**	**NIHSS >15**
DISCHARGE WITHOUT HOME ASSITANCE	**34%(17)**	**16%(8)**	**6%(3)**
DISCHARGE WITHOUT ASSISTANCE	**2%(1)**	**4%(2)**	**18%(9)**
EXPIRED	**0**	**2%(1)**	**2%(1)**

In this study only 2 cases were expired and 40 cases were discharged showing mortality was more in Hemorrhagic stroke compared to Ischemic stroke.

Table 8: OUTCOME OF PATIENTS WITH HEMORRHAGIC STROKE

No of cases-8	**NIHSS<4**	**NIHSS 5-15**	**NIHSS >16**

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DISCHARGE WITHOUT HOME ASSISTANCE	**2%(1)**	**0**	**0**
DISCHARGE WITH HOME ASSISTANCE	**0**	**6%(3)**	**2%(1)**
EXPIRED	**0**	**0**	**6%(3)**

In this study only 2 cases were expired and 40 cases were discharged showing mortality was more in Hemorrhagic stroke compared to Ischemic stroke.

Table 9: DURATION OF PRESENTATION OF ISCHEMIC STROKE

DURATION OF PRESENTATION	NIHSS <4	NIHSS 5-15	NIHSS >15
<4.5HRS	**10%(5)**	**4%(2)**	**4%(2)**
4.5-24HRS	**20%(10)**	**12%(6)**	**18%(9)**
>24HRS	**6%(3)**	**6%(3)**	**4%(2)**

In this study total 9 patients were presented within 4.5 hrs of study among which only 5 patients were having NIHSS<4. We could thrombolyse one patient, other 4 patients were not thrombolysed due to financial issues, unwillingness of relatives and associated comorbities.

Discussion

The severity of stroke, based on the findings detected by neurological examination was found to be a strong indicator of prognosis.

In our study patients with acute ischemic stroke and a baseline *NIHSS* < 4 had a favorable outcome on discharge as compared with those with a score >4 which was comparable to studies by Jeffrey L.Saver et al.

82%of the patients were of Ischemic stroke and only 16% were of Hemorrhagic stroke.

The mean age for stroke in the current study was 60 years, which is consistent with studies by Maskey et al. and Awad SM et al., where the mean age was 63 years and 63.66 years, respectively.

Comorbities like Hypertension and Diabetes made up 55% of the study population, which was comparable to studies by Maskey et al. (40%), Gauri et al. (56%) and Eapen et al. (44%). Patients with past H/o coronary artery disease made up 12% of the current study's participants, which was comparable to the study by Kaur et al. (6%).

Compared to other research, the percentage of smoking and drinking in the current study was either lower or similar.

The most prevalent kind of stroke in the current study was ischemic, or cerebral infarction (84%), which was consistent with research by Aiyar et al., who found that infarction was present in 70% of their patients. Hemorrhagic stroke, which accounted for 16% of our stroke cases, was found to be consistent with studies by Eapen et al (32%), Aiyar et al (26%), and Devichand et al (25%).

NIHSS is found to be more severe in hemorrhagic as compared to ischemic stroke.

In our study only 2 patients expired among 42 cases due to ischemic stroke while 3 cases expired due to hemorrhagic stroke among 8 patients which was consistent with study done by Hasina A et al.,Ammar AL et al.

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With increase in NIHSS, there was increased disability and increased mortality observed , which was consistent with studies by Hamidreza Saber et al.

The NIHSS score on the day of admission predicts the outcome of stroke,and thus prognosis of stroke. All those patients who died had their base line NIHSS score more than 16.

Most of the patients with stroke recover satisfactorily with conventional treatment and NIHSS score at the time of discharge reflects these changes.
Early recognition of risk factors and specifically treating them can lead to prevention stroke and its permanent disability.

Medical and paramedical staffs can be trained to calculate NIHSS for early recognition of stroke and effective management.

Summary

1. Incidence of Stroke was observed more in males as compared to females .
2. Multiple risk factors were associated with most stroke cases.
3. Systemic hypertension was the most common risk factor/systemic illness associated with stroke followed by DM and smoking .
4. Limb weakness was the most common symptom followed by speech disturbance and altered level consciousness.
5. NIHSS was helpful in identifying persons with stroke severity.
6. NIHSS was useful in patient assessment and stratification for further course of management.
7. The NIHSS score on the day of admission(base line score) is useful in selecting patients for whom early intervention(thrombolysis) will be beneficial those (with NIHSS between 4 and 20).

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