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Original Article

ACUTE POST COMPLICATIONS IN STROKE PATIENTS VISITING A TERTIARY TEACHING HOSPITAL

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ABSTRACT

Objective: The study was focused on assessing the incidence of stroke and their association with types of the risk factor, with an emphasis on acute post complications and their symptomatic management for early detection.

Methods: A prospective observational study was carried out on stroke patients visiting a medicine department of a tertiary hospital, Andhra Pradesh, India from August 2017 to November 2017. Patient's demographics and lab data was collected for analysis.

Results: A total of 110 patients participated in the study. Among them high incidence is males (69%), 61-80yrs (48%), with 2 risk factors (35%) among which age (67%) and hypertension (66%) were related to the high degree of prevalence. 47% of the study population were identified with one complication, among which seizures account for 38% of patients. All the complications associated with the condition were treated with drug classes, in which anti-epileptic drugs (AEDs) were the mainstay in the management of epilepsy.

Conclusion: Brain edema and seizure attack were the most accountable complications identified in the study population. The early detection of these problems can improve the stroke outcomes and can reduce the mortality or disability rate.

Keywords: Epilepsy, Hypertension, Post-complications, Stroke

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INTRODUCTION

Apoplexy, the word used by Hippocrates, who is considered as the father of medicine now commonly known as a stroke, which is defined as a syndrome with several pathophysiologies involved. According to the World Health Organization (WHO) it is a condition "characterized by rapidly developing clinical symptoms and/or signs of focal, and at times global, loss of cerebral function, with symptoms lasting more than 24 h leading to death with no apparent cause other than that of vascular origin" [1].

Globally cardiovascular diseases are considered to be the first commonest cause of mortality among which stroke occupies the second place [2]. As per India stroke Factsheet updated in 2012, the age-adjusted estimates prevalence rate ranges between 84/100,000 and 262/100,000 in rural and between 334/100,000 and 424/100,000 in urban areas [3]. Reports show a decline in death rates in past decades still it holds approximately 20%, ranging from 15% to 58% depending on stroke subtype. Based on risk factors and pathophysiological changes, stroke is mainly classified as Ischemic and hemorrhagic type. Both share a crucial role in the extent and site of brain damage that determines the pre and post-stroke complications, therapeutic interventions and socioeconomic burden on patients. In addition to the initial neuronal damage resulting in functional, cognitive, and sensory deficits associated with the disease, patients are also at high risk of developing a wide range of medical complications, which account for 40% to 96% [4], involving both short-term and long-term complications: pneumonia, urinary tract infection (UTI), pressure ulcer, falls, venous thromboembolism, seizures, osteoporosis and central pain states [1].

Recent studies showed an incidence rate of 119-145/100,000 in India [3]. High chance of recurrence in stroke survivors, post-stroke complication risk and long-term rehabilitation due to disease-associated disability and economic burden on patient demands for its early identification. So the objective of this study is to focus on the incidence of these complications whose identification helps in early recognition, prevention and management of the condition and improving the patient care.

MATERIALS AND METHODS

A prospective observational study for assessing the demographic parameters, risk factors associated and post-complication of stroke patients was conducted in the medicine department of a tertiary care teaching hospital for a period of 6 mo from August 2017 to November 2017 in Kurnool district, Andhra Pradesh.

Materials

Consent form for patients, Data entry form 1 for demographic details and Data entry form 2 for listing the post-stroke complications with respective treatment chart.

Inclusion criteria

The patients who meet the following criteria was enrolled where, Inclusion criteria were patients aged ≥ 18 y of both genders, who had provided a consent to participate in the study.

Exclusion criteria

Patients with diseases like psychiatry, cancer, pregnant and nursing mothers were excluded.

Study method

The details of cases found in the medicine department, including patient name, age, sex, past medical history and other relevant information were collected. The collected prescription was entered into the Microsoft Office Excel sheet according to their age, gender; therapeutic category and mean percentage were calculated.

Ethical approval

Consent from all the patients was taken in respective form and Ethical approval was taken with a no.9 from Viswabharathi Medical College.

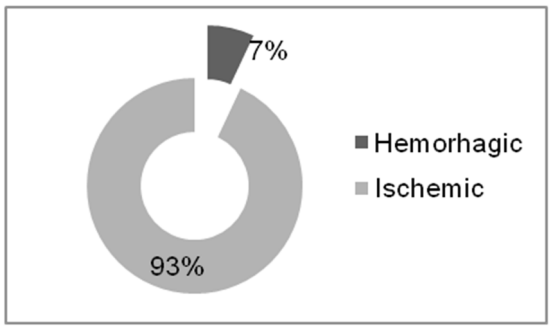

Fig. 1: Percentage of the study population diagnosed with ischemic and hemorrhagic stroke

RESULTS

A total of 110 patients who are diagnosed with any one type of stroke are recruited for the study after a proper consent was taken. Out of them, the highest incidence is ischemic stroke affecting 102 (93%) patients followed by 8 (7%) patients with hemorrhagic type represented in **Error! Reference source not found.**. Among Ischemic stroke patients, most of them are males 70 (69%) compared to females 32 (31%) as shown in **Error! Reference source not found.**. It was found that all the hemorrhagic patients are found to be males.

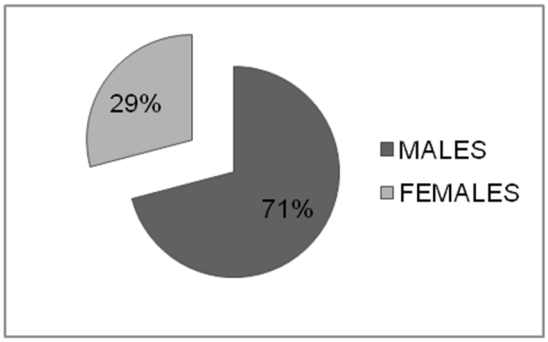

Fig. 2: Gender distribution among patients suffering from ischemic stroke

The patients based on their demographic data were categorized into different age groups and among them, most of the patients were identified under 61-80 y range i.e., 53(48%). Age groups and patients distributed among are mentioned in Error! Reference source not found.

Table 1: Age distribution in stroke patients

Age range	Sum (n=110)	%
0-20	0	0
21-40	8	7
41-60	45	41
61-80	53	48
81-100	4	4

In the study population nearly 35% of them were found with 2 risk factors, followed by 25% by 3 and 14%>3 risk issues associated. Only 5% of them showed nil risk factors, as depicted in **Error! Reference source not found.** Among them, age (67%) and hypertension (66%) was related to the high degree of prevalence and other risks in patients are shown in Table 2.

Table 2: Number of risk factors

Risk factor	Patient number	Percentage
0	6	5%
1	23	21%
2	39	35%
3	27	25%
>3	15	14%

The patients are treated with the different class of drugs among which anti-platelets 88 (91.16%) accounts the highest percentage and nitrates 6 (0.62%) is the least prescribed. The remaining classes of drugs and their percentage of usage are mentioned in following table 3.

Table 2: Type of risk and patient percentage

Risk factor	Patient number	Percentage
Age	74	67%
Alcohol	24	22%
Cigarette smoking	13	12%
Diabetes mellitus	40	36%
Hypertension	73	66%
Cardiac disease	12	11%
Parkinson's disease	2	2%

It was noted that 47% of the study population were identified with one complication, among which seizures account for 38% of patients. 45% of patients developed brain edema, confirmed by CT scans within 2-5 d of their disease onset. The individual percentages of patients with the complications are mentioned in Table 3 and Table 4.

Table 3: Patients with stroke complication

Number of complication	Patient number	Percentage
0	14	13%
1	52	47%
2	36	33%
3	6	5%
>3	2	2%

Table 4: Type of complication and their percentage

Complication type	Patient number	Percentage
Brain edema	50	45.5
Seizures	35	31.8
DVT	26	23.6
Depression and anxiety	12	10.9
Limb pain	9	8.2
Urinary tract infection	4	3.6
Chest infections	4	3.6

All the complications associated with the condition were treated with drug classes in the study population. Edema, due to the pathophysiological changes of ischemia was controlled by using an osmotic diuretic (mannitol) in all 50 patients (100%). In all age groups, anti-epileptic drugs (AEDs) were the mainstay in the management of epilepsy. AEDs accounted for nearly 75% of post-stroke seizure therapy, followed by benzodiazepines i.e., clonazepam (25%). The different complications and their respective management options, by utilizing the varied class of drugs are listed in the following Table 5 and AEDs= Anti-Epileptic drugs; BZDs= Benzodiazepines; CTX=Ceftriaxine; MEM=Meropenam; NSAIDs=Non-steroidal anti-inflammatory drugs; OXA=Ofloxacin; SSRIs=Seratonin selective re-uptake inhibitors; TCAs=Tricyclic anti-depressants.

Table 5: Drug utilization in the therapy of post-stroke complications

Complication	Class of drugs used	No of patients	Percentage
Seizures	BZDs	9	25
	AEDs	27	75
Limb pain	NSAIDS	16	61.5
	Tramadol	5	19.2
	Muscle Relaxants	5	19.2
DVT	LMWHs	24	82.8
	Others	5	17.2
Depression and anxiety	BZD	8	61.5
	SSRIs	4	30.8
	TCAs	1	7.7
UTI	Fluoroquinolones (OXA)	4	100
Chest infections	Carbepenems (MEM)	2	40
	Fluroquinolones (MXF)	2	40
	Cephalosporins (CTX)	1	20

AEDs= Anti-Epileptic drugs; BZDs= Benzodiazepines; CTX=Ceftriaxine; MEM=Meropenam; NSAIDs=Non-steroidal anti-inflammatory drugs; OXA=Ofloxacin; SSRIs=Seratonin selective re-uptake inhibitors; TCAs=Tricyclic anti-depressants.

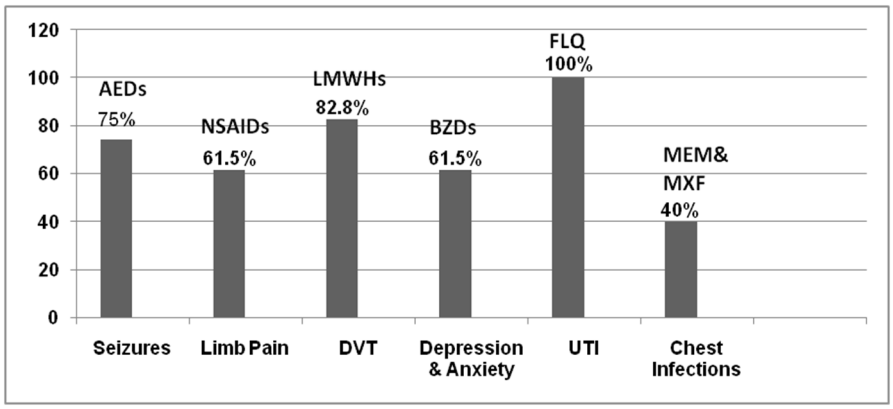

Fig. 3: Highly prescribed drug class in various post-stroke complications

DISCUSSION

Many studies on the incidence of stroke reported the predominance of the ischemic type over hemorrhagic, in concordance with our study results were 93% of the patients belong to that group [5-7].

The demographic parameters of the study populations show a dominance of male gender (71%), of age group 61-80 y range i.e., (48%). Similar reports were shown in other Studies [5-8].

In the study population, nearly 35% of them were found with 2 risk factors, similar to another study by Shrestha [7]. A study by Vaidya detailed that hypertension is one of the most common risk factors associated with stroke patients, in similarity with our results, showing 66% of the population with hypertension [5]. A retrospective study by another author also reported that 62% of their stroke patients had hypertension as the risk factor [9].

Various medical, neurological and psychological complications are allied to stroke after the acute attack. The identification of such complications in the first days of effect helps to notice the early preventability with a high degree of functional outcome. In our study, high incidence of patients was with one complication i.e., 47%, in similarity with Karen c. Johnston [10,1]. A population-based study in Sweden found that patients over 60 y of age, 45% of seizures were secondary to stroke and associated with a 23–35-fold increase in the incidence of seizure. In our study, most of the patients showed seizure symptom during a stroke attack. In earlier studies, a highly variable, ranging from a low of 7.7% to a high of 42.8% in the incidence of seizures were noted, but the recent study series shows fewer variants with average 10% risk of seizures within 9-10 y after stroke [11]. All the other complications were treated as per their standard guidelines for symptomatic relief.

CONCLUSION

Thus the correct identification of the risk factors associated with the stroke patients prior; help us to bring down the cost burden along with improvement in the quality of life effectively. This study turned out to be similar to many other studies in different countries implementing the need for patient-specific risk correction by using standard therapeutic guidelines, for effective patient-centred care. This study is mainly limited to less number of sample in a single center, hence further research in assessing the risk factors and post complications in stroke patients, paving for a significant disease management outcomes.

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AUTHORS CONTRIBUTIONS

Spurthi T completed my post-graduation (M. Pharm in Pharmacy practice) from Manipal College of Pharmaceutical Sciences, Manipal. Currently working as an assistant professor (Department of pharmacy practice) in CES College of Pharmacy, Kurnool, Andhra Pradesh.

Co-author

Ms. Rekha rani K and Mrs. Navya Y helped for the research activity and Rani P, along with Kusuma Kumari worked in collecting the data from the hospital. As co-authors regarding this paper, all of them provided their knowledge and time from beginning to end of the work.

CONFLICT OF INTERESTS

Declared none

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