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Awareness about stroke symptoms and treatment options amongst stroke patients admitted to tertiary care stroke centre

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Abstract

Introduction: Stroke is a leading cause of death and disability. The awareness of stroke symptoms remains far from satisfactory amongst the general population. There is a significant delay in patients reaching first medical care inspite of thrombolysis therapy approved for last 18 years. Knowledge of this option is far from desirable amongst patients and their relatives. The study was conducted to know about awareness of stroke, its symptoms and treatment options in particular about thrombolysis.

Methods: 100 consecutive patients admitted to Government Medical College Kota were selected and asked questions about awareness of stroke, delay in arriving medical consultation, reasons for delay and therapeutic options available including thrombolysis by a preformed questionnaire proforma.

Result: 72 patients were males while 28 were females. Seventy one were having ischemic stroke and 29 were having hemorrhagic stroke. Forty five patients gave history themselves while in 55 percent, it was reported by attendants. Only 35% patients or informants perceived or came to know that patient had stroke/paralysis. There was a delay of mean 14.8 hrs(range 1 hr to 4 days) in attending first medical care. Lack of awareness about the symptoms of stroke was the reason for delay in 49%. In those who reached primary care within window period, lack of referral by primary physician was the major reason for delay with others being lack of transport facilities and lack of imaging facilities. Only 2 percent knew about the meaning of brain stroke and its difference from heart attack. Only 6% knew about the option of thrombolytic therapy. Forty one percent believed that they will recover while 59% did not know about the recovery or thought it is not treatable. Ninety percent had access to either print or electronic media.

Conclusion: Stroke awareness and awareness about treatment options is very poor amongst patients attending tertiary care centre. Study highlights need to involve electronic and print media and non-government organisations for increasing stroke awareness. Primary care physician and general practioners also need training regarding thrombolytic therapy and need for early referral of such patients to stroke centres.

Keywords: Awareness, Education, Stroke, Thrombolytic therapy

Introduction

Stroke is one of the leading causes of death and disability in India.[1] The incidence rate is 119-145/100,000 based on the recent population based studies. Study from Kolkata showed crude prevalence rate of 147/100,000 and an annual incidence rate of 36/100,000.[2] Two-thirds of global stroke occurs in low- and middle-income countries.[3]

Among the neurological diseases associated with mortality and morbidity, stroke is the most important preventable disease. The established modified risk factors for stroke include hypertension, dyslipidemia, diabetes mellitus, heart disease and smoking. Appropriate knowledge and awareness of perceived risk factors and warning signs would facilitate early interventions.

Despite recent advances in stroke therapy, the public remains uninformed about stroke and only few stroke patients present to hospital in window period. Even in developed countries, like the United States,[4] Australia[5] and South Korea,[6] there is a recognized lack of knowledge in the community about established stroke risk factors and warning signs.

The major development in the treatment of acute ischemic stroke has been the introduction of thrombolysis therapy (tissue plasminogen activator tPA).[7]

In spite of good clinical efficacy and favorable economic profile, even in industrialized nations, thrombolysis therapy is underutilized. In 2009, 3.4-5.2% of acute ischemic stroke patients in the United States received thrombolytics.[8] Stroke thrombolysis is currently used in few developing countries like Brazil, Argentina, Senegal, Iran, Pakistan, China, Thailand, and India.[9]

Aims & Objectives

- To Study the epidemiology of stroke patients and evaluate the age, sex distribution, risk factors, rural urban corelation amongst the patients admitted with acute stroke.
- To know about awareness of symptomatology of stroke, perception of symptoms by patient and family members
- To assess awareness of treatment options including thrombolysis

- To analyse reasons for delay in arriving for medical consultation

Materials and Methods

This study was a cross sectional study carried out in a tertiary care centre at Kota, Rajasthan. 100 consecutive patients admitted between January to July 2014 presenting with acute stroke, ischemic or hemorrhagic, were interviewed. Investigations including Fasting blood sugar, Lipid profile, ECG, 2D echocardiography, Carotid Doppler were done to evaluate risk factors. A plain CT scan brain or MRI brain was done, whichever was feasible, to confirm diagnosis of acute stroke.

A preformed questionnaire was prepared and various questions were asked including:

1. Demographic data – Age, Sex, Literacy, Occupation, Residence –Rural or Urban
2. Detailed history was taken from the patient or informant including exact time of onset of symptoms, time of first noticing the event and time of receiving first medical care.
3. Risk factors like history of Hypertension, Diabetes, smoking, alcohol, family history were enquired and analysed.
4. Awareness of patients and informants about treatment options, and perception about recovery was analysed.
5. Reasons for delay in seeking medical care were assessed.
6. Among the patients who reached primary physician first, awareness of the physician about stroke and treatment was analysed.

Results

A total of 100 consecutive acute stroke patients with ischemic or hemorrhagic etiology were evaluated for various risk factors, awareness and factors that prevented thrombolysis; 71 patients had Ischemic Stroke while 29 had hemorrhagic stroke. 72% patients were males while 28% were females.

65% patients presenting as Ischemic stroke were from the rural areas while 35% were from Urban area. However the rural population constituted 59% of Hemorraghic stroke Patients. (Table 1)

Table1: Demographic profile

	Ischemic Stroke	**Hemorrhagic Stroke**
Total	71	29
History Given	Patient - 26 (37%) Attendant-45(63%)	Patient– 9(31%) Attendant-20(69%)
Mean Age	56.6	56.3
Sex	M- 50 (70%) F – 21(30)%	M-22(75%) F -7(25%)
Distribution	Urban- 25 (35%) Rural- 46 (65%)	Urban - 12(41%) Rural -17 (59%)
Thombolysis Awareness	Urban -3(4%) Rural -1 (1.4%)	Urban- 2(7%) Rural – 0(0%)

Average age of patient in this study was 56.37 ± 14.67 years (mean ± standard deviation (SD)). Hypertension was the commonest risk factor for stroke (49%) followed by diabetes (35%), smoking (32%) and dyslipidemia(24%). (Table 2)

Table 2: Risk Factors for Stroke

Risk Factors	**Ischemic Stroke**	**Hemorrhagic Stroke**
Rural		
HT	31(44%)	16(54%)
DM	21(30%)	6(22 %)
Smoking	44(62%)	17(58%)
Others	7(10%)	2 (8%)
Urban		
HT	41(58%)	18(63%)
DM	26 (36%)	7(24%)
Smoking	34 (48%)	12(40%)
Others	10 (14%)	5(18%)

During the study period, only 4 patients could be thrombolysed with intravenous tPA, although 23 patients had arrived in the window period either directly to the hospital or to the primary physician.

The following were the observations of the study (Table 3)

- Average Time taken to reach the tertiary care hospital was 16.4 hrs±13.5 (mean ± standard deviation (SD)). Mean time in Referred patients was 18.1hrs.
- Only 35% patients perceived the symptoms as stroke which led to considerable delay in seeking medical care.
- 52% recognised Brain as the affected organ in Stroke.
- 41% believed that they may recover, the rest were not aware about the recovery or thought that Stroke was incurable.
- Amongst the 9 patients of Ischemic stroke who arrived in the window period to the tertiary care hospital, 2 patients had financial problems, 2 had contraindications and 2 were not referred by the emergency department in time.
- Amongst the 14 patients who reached the primary care within window period, 6 patients could not be thrombolysed as they were not referred by the primary care physician.
- Four patients had lack of adequate transport facilities.

- CT Scan facility was not available for 2 patients at the primary care level and 1 patient was misdiagnosed to be brachial injury by the physician.
- One of the patient's relatives believed in faith healing and went to a local temple first which caused considerable delay.

Table 3: Awareness amongst patients

	Patients Coming directly to the Hospital	**Referred Patients**
Total	42	58
Perception of symptoms as stroke	19 (45 %)	17 (29%)
Recognising brain as the affected organ	23(55%)	29(50%)
Perception about recovery	20(47%)	21(36%)
Time taken to seek medical care	Mean – 12.5 hrs	Mean 18.1 hrs
	Range (1hr to 3 days)	Range (1hr to 5days)
Acess to media	40 (95%)	50 (86%)
Patients arrived in window period	9 (21%)	14(24%)
Reasons for not giving thrombolysis	Late referral -2 (22%)	Lack of awareness in physician- 6 (42%)
	Contraindications -2(22%)	CT scan not done-2(14%)
	Financial -2 (22%)	Wrong diagnosis-1(7%)
		Lack of transport -3(21%)
		Religious belief 1(7%)

Patients who arrived to the hospital directly had better knowledge about stroke symptoms and treatment options than the patients who were referred.

Discussion

The knowledge of stroke is quite low among the population. In a study in northwest India, majority (73%) of the subjects (including both patients and relatives) interviewed did not realize that the symptoms were due to stroke. Only one third of the study population in study conducted by Pandian et al. correctly identified the brain as the affected organ in stroke.[9]

The results of our study suggest that pre-hospital delay in patients with acute stroke was considerable and that there are long intervals between the onset of symptoms and the initiation of seeking medical help. One of the most important pre-hospital barriers of thrombolysis therapy in the developing world is non-recognition of stroke warning signs by patients at risk, families, the general public, and even primary care physicians in some places.[10] Pre-hospital delay is longer for stroke than for ACS. Even though there is a pathophysiological overlap between the two conditions; one of the main reasons is that pain is a symptom in the majority of patients with ACS, whereas pain is rarely associated with stroke.[11] Most studies from developed countries have found that knowledge about stroke had positive correlation with income and education.[12]

Inspite of good clinical efficacy and favorable economic profile, even in industrialized nations thrombolysis therapy is underutilized, only a very small proportion, only 2% of stroke patients are actually being thrombolysed. In Scotland, only 6% of stroke patients received thrombolysis in 2010. The number of stroke patients receiving tPA in the third world is extremely low. In a study from Pakistan, the rate of thrombolysis was 0.52-1.5%.[13]

It is feasible to give intravenous tPA for acute ischemic stroke in India as shown by Padma and her colleagues.[14] However there are several barriers for safe and effective implementation of thrombolysis therapy in acute ischemic stroke in India.

In our study Primary care physician failed to recognize stroke in 42% of the referred patients. In a study done by Badachi et al, most common mistake done was attributing symptoms to raised blood pressure which is a normal compensatory response of body to stroke.[15] Training programs is needed for primary care physicians so that they will be capable enough to recognize stroke early.

One of the major reasons for the late arrival is unavailability of transportation.[15] There is hardly any ambulance service for transportation of the patients from rural India. Even in urban India transportation to the nearest hospital may not be in time. Government and Panchayats should act in concert to provide emergency ambulance services round the clock to mitigate pre-hospital delay due to transport problem.

Most of the centers with infrastructure and resources to give thrombolysis therapy are in urban India, where as 80% of the population lives in rural India[9] Lack of imaging facilities in the rural India is still a significant problem. In our study one of the patients who arrived in window period in a local hospital where imaging was not available.

One of the main reasons of low utilization of thrombolytic therapy in developing countries is financial constraints because of high cost of r-tPA.[17] A

study from south India reported that 30% of stroke patients reached the hospital within 3 h post-event and 16% were eligible for thrombolysis therapy, but all of these eligible patients belonged to a lower socioeconomic group and could not afford the therapy due to its high cost Government and NGOs should play an active role to make r-tPA available at a subsidized rate.

Similar to epilepsy, cultural beliefs may have an influence on treatment seeking behavior among patients with stroke. Especially the patients of Southern Rajasthan have a belief on faith healing by a local goddess.

Awareness and knowledge about stroke symptoms and treatment options remains poor. There should be more focus on the "time is brain". Public education campaigns to increase awareness of stroke symptoms such as the face arm speech time (FAST) campaign, are needed especially in the developing countries.[18]

Limitation of the study was that it was a single centre study at a tertiary care centre. Since the study was carried out in an urban centre, the population studied is more likely to be Urban and of higher economic strata. More multi-centric studies are required on stroke awareness which involve various socioeconomic strata and involve a larger number of patients.

Conclusion

Major cause for delay in seeking medical care was lack of recognition of signs and symptoms of stroke. Lack of awareness in primary care physician was major reason for delay in referred patients. Other factors included transport problems and non-affordability. Knowledge about thrombolysis is present in only 6% mostly in urban population even though access to media is present in 90%. Study highlights need to involve media, NGOs for creating stroke awareness in population and timely referral of eligible patients for thrombolysis by primary physicians.

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