Original Article

POSSIBILITY OF THROMBOLYTIC THERAPY IN ACUTE THROMBOTIC STROKE IN SERVICES HOSPITAL LAHORE

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Objective: To find Public awareness regarding stroke and the cause of delayed presentation of stroke patients in our setup at Services Hospital Lahore

Material and Methods: This prospective study was conducted on 113 patients in Department of Neurology, Services Hospital, Lahore over a period of one year from January, 2012 to December, 2012. The time of presentation was divided into 4 segments; within 6 hours of stroke onset, within 6-12 hours of stroke onset, within 12-24 hours of stroke onset and more than 24 hours of stroke onset with diagnosis of cerebral infarction. Also knowledge of patients regarding tPA and cause of delay was assessed.

Results: There were 68 males and 45 females with age range of 27 to 83 years. Only 9 patients presented within 6 hours, 22 within 6-12 hours, 47 within 12-24 hours and 35 more than 24 hours. A very little percentage of patients with cerebral infarction landed in Emergency department within 6 hours of stroke onset. Also 91.1% of patients were unaware of thrombolytic therapy. When asked for a single factor for pre-hospital delay, 67% of patients labelled transportation issues as a cause.

Conclusion: Because early presentation is a prerequisite for thrombolysis for acute ischemic stroke we recommend to start educational programs that increase public awareness of the need to seek medical help promptly after stroke and word stroke should be replaced with brain attack and measures to improve the traffic sense should also be undertaken..

Keywords: Stroke; Ischemic; Thrombolysis.

Introduction

Stroke is a common problem worldwide and it is estimated that annually 15 million people worldwide suffer from stroke. These results in 5 million deaths and another 5 million are left with permanent disability. Therefore stroke is considered as the most common cause of permanent disability worldwide[1]. At the same time over the next decade, the stroke burden is projected to rise, particularly in developing countries. So, timely access to effective medical treatment will be an important element to combat this public health challenge. Currently there is a continuous ongoing search for better and effective treatment regimens for this problem. Among agents being used for acute management of stroke, tissue plasminogen activator (tPA) was approved more than a decadeago[2]. At that time there was a hope that this new treatment would benefit many stroke patients, but this promise has yet to be realized. The main factor for this is that thrombolysis is a time dependent activity[3]. There is a narrow window of opportunity and that is within 3 hours after stroke in which tPA should have been administered. So if patient presents after 3 hours of symptom onset, it is

of no use[4,5]. In developing countries like Pakistan, the arrival of the patients after the onset of symptoms is usually much more than 3 hours, so our patients are usually unable to get benefit of this drug. So we planned this study to find out the awareness of our patients about this treatment as well as to find causes of delayed presentation of patients after stroke in our society.

Material and Methods

This was a cross-sectional study conducted at Neurology Department of Services Hospital, Lahore, from January 2012 to December, 2012. All the adult patients of both gender with age >18 years presenting with sudden onset of focal neurological deficit established on detailed history and careful examinationwere included in the study. All patients underwent CT scan of brain plain to rule out hemorrhagic stroke and those with ischemic stroke were included. Those who recovered their focal deficit within 24 hours and normal CT Brain plain were also excluded from the study (Figure 1). After arrival in the emergency department (ED), all the patients were attended by on duty doctor of the department and were treated according to the

diagnosis. Informed consent was taken. A questionnaire devised by the authors was filled by the patient (if possible) or the accompanying attendants. The questionnaire was divided into three portions: Demographic details of the patient; pre-hospital delay and cause of the delay; and knowledge of the patients about tPA. Pre-hospital delay was defined as the time from symptom onset until the earliest documented time in the ED. The total duration was further categorized as <6 hours, 6-12 hours, 12-24 hours and >24 hours of stroke onset. Regarding knowledge about tPA, they were asked following question:Do you have any idea about any injectable mode of treatment for acute stroke?All the data were recorded on the proforma. Data was analyzed by using statistical package of social sciences (SPSS) version 21. Descriptive statistics, frequencies, and percentages were calculated for variables such as type of stroke, living conditions, time of stroke onset, status of financial support, and time of arrival to hospital after development of symptoms. Mean ±standard deviation (SD) was used for continuous variables such as age and descriptive statistics were used for the analysis of the data.

Results

During this study period, 173 patients with stroke presented in our ED. Among these, 113 patients (65.3%) had ischemic stroke, 32 patients (18.4%) had hemorrhagic stroke while 28 patients (16.1%) had transient ischemic attacks (TIAs). Among these, 113 patients with ischemic stroke were included in the study. Of 113 patients, 68 were male (60.17%) while 45 were female (39.82%). All the demographic details of the patients is summarized in **Table-1** of all patients, 59 (52.2%) patients had stroke onset in daytime (6 am to 6 pm) while 54 (47.8%) patients developed symptoms of stroke in the night time (6 pm to 6 am). The pre-hospital delay of patients in our study is summarized in (**Fig-2).** Among 113 patients, 65 patients (57.5%) were having lesion of non-dominant hemisphere while remaining 48 patients (42.5) had dominant hemisphere involved. While asked from the patients regarding knowledge about tPA, 84 patients (74.33%) told about injection Neurobion (Middle east brand) or Methycobal. A total of 103 patients (91.1%) were unaware of thrombolytic therapy but they were aware of costly injection given for heart attack **(Fig-3).**When asked for a single factor for pre-hospital delay, 67% of patients labelled traffic issues as a cause **(figure 4).**Also we found that out of 9 patients presenting within 6 hours of stroke onset, 7 patients had left sided weakness. Similarly of 22 patients presenting within 6-12 hours of stroke onset, 17 patients had left sided weakness. Those 42 patients who presented in 12-24 hours, 14 patients had left side involved.

Table-2: Demographic details of the patients in the study.

Age in Years		Percentage
Age in Years		55.75±10.34
Gender	Male	68 (60.17%)
	Female	45 (39.82%)
Socio-economic Status	Poor	32
	Middle	75
	High	06
Place	Uban	68
	Rural	26
Living conditions		2(1.7%)
Gender	Male	111(98.2%)

Pre-hospital delay of the patients
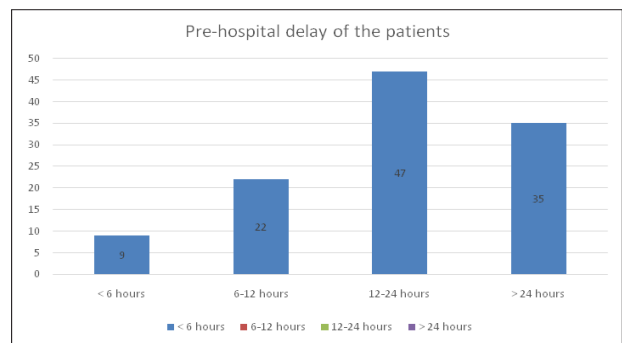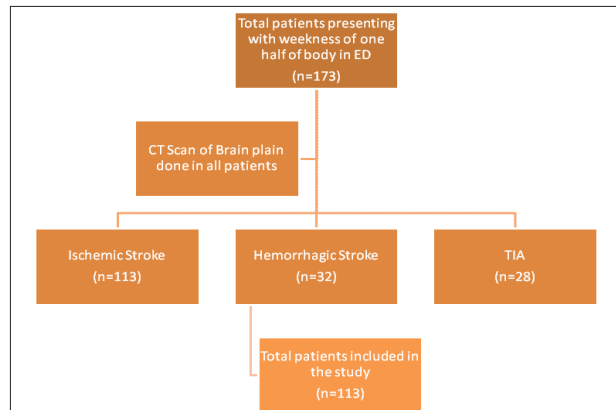
Discussion

Pre-hospital delay has been labeled as a major factor for prognosis of patients with stroke. Various studies
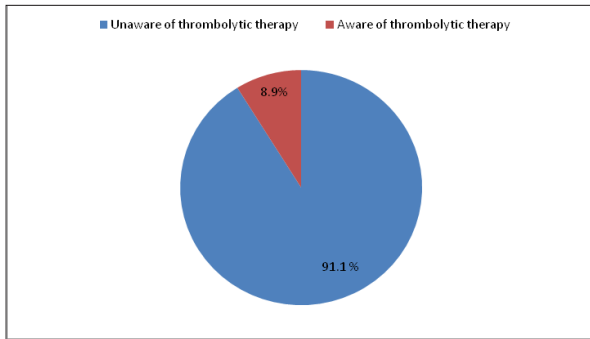
Fig-3: Showing percentage of Public awareness about thrombolytic therapy
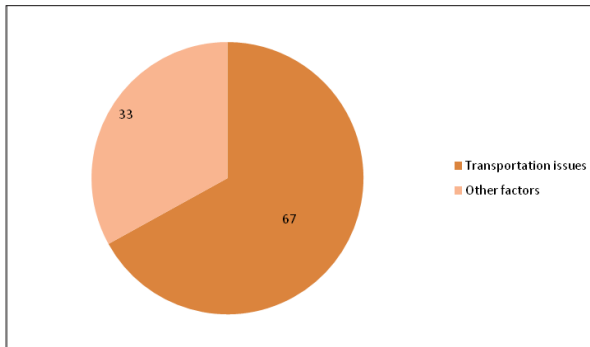

Fig-4: Showing percentage of patients depicting causative factors of Pre-hospital delay

have been done as to label cut-off point for early Versus late arrivals. Some studies have kept this time as 2-hours (door to needle time)[6] while others have kept 3 hours as a cut-off point.[7] In developed countries, this time has been even brought to 20 minutes. After the landmark Economic Community of Central African States (ECCAS) III trial, different studies have extended the cut-off level for thrombolytic therapy upto 4.5 hours.[8] Various studies have been done to find out the factors related to pre-hospital delay. In a Chinese study, it was found that patients >65 years of age and female patients were more likely to arrive early than younger patients and males.[9] Also Ashraf and colleagues found that higher educational status and those from the city had shorter pre-hospital delays.[10] In another study Kothari *et al.,* also found that level of stroke knowledge had no notable impact on prompt ED arrival.[11] In our study when asked about a single cause of delay to reach the hospital, most common answer was traffic problem. It seems to be true if we analyze the traffic system of the Pakistan and particularly Lahore, where this study was conducted. But as stroke most commonly occurs during night time, this problem seems to be a lame excuse because during night times, there is minimal traffic on the

roads and there must be other factors behind this delay which need to be sought out. A similar study in Pakistan had been done by one of the authors previously about 20 years ago. When our results were compared with that study, it was found that over 20 years, some changes have occurred in our society regarding pre-hospital delay.[12] As in our current study, we found that 7.9% of patients presented within 6 hours of the start of symptom while in previous study there were 4% of the patients in this group. Similarly those reaching in 6-12 hours were 19.4% as compared to 14% in previous study. Patients with 12-24 hours pre-hospital delay were 41.5% in this study while there were 34% patients in previous study. Those having pre-hospital delay more than 24 hours were 30.9% in current study while there were 48% of patients in previous study (**Figure-3).** This clearly shows that pre-hospital delay has been decreased over the time in our population. This may be due to better ambulance services in Pakistan, more awareness and knowledge of patients, better referral and better roads and traffic system over 20 years of period. In BEATS study, Wilson AD and colleagues found that better traffic control and good ambulance service is an important factor to improve pre-hospital delay in patients with stroke.[13] The limitation of our study was that it was a single-center trial and also with limited number of patients. We also have not evaluated other causes of Pre-hospital delay in our patients. On the basis of this study we have concluded that as early presentation is a prerequisite for thrombolysis for acute ischemic stroke so educational/awareness programs that increase public awareness of the need to seek medical help promptly after stroke should be developed. At the same time, measures to improve the traffic sense should also be undertaken so that maximum of our patients could get benefit of PA therapy after stroke.

Conclusion

Because early presentation is a prerequisite for thrombolysis for acute ischemic stroke we recommend to start educational programs that increase public awareness of the need to seek medical help promptly after stroke and word stroke should be replaced with brain attack and measures to improve the traffic sense should also be undertaken.

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