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Anjum Farooq
Bolan University of Medical & Health Sciences, Quetta

Muhammad Essa
Bolan University of Medical & Health Sciences, Quetta

Nimra Shafique
Bolan University of Medical & Health Sciences, Quetta.

Sakina Gull
Bolan University of Medical & Health Sciences, Quetta.

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HURDLES OF INTRAVENOUS THROMBOLYSIS IN ACUTE ISCHEMIC STROKE AT BALOCHISTAN

Anjum Farooq[1], Muhammad Essa[1], Nimra Shafique[1], Sakina Gull[1]
[1].Department of Neurology, Bolan University of Medical & Health Sciences, Quetta.

Corresponding author: Anjum Farooq *Department of Neurology, Bolan University of Medical & Health Sciences, Quetta.* ***Email:*** *dranjumaltaf@gmail.com*

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ABSTRACT

Background and objective:
Intravenous thrombolysis (IVT) with alteplase tPA (tissue plasminogen Activator) is the FDA approved treatment for acute ischemic stroke. The objective of this study was to determine the hurdles of intravenous thrombolysis in acute ischemic stroke in Balochistan.

Methods:
A prospective cross-sectional observational study was carried out from June 2021 to December 2021 at Neurology department of Bolan Medical Complex Hospital Quetta on 272 patients of acute ischemic stroke who fulfilled the criteria. Proforma was filled by relative or patient after informed consent. Proforma included sex, age, diagnosis, time of presentation after stroke and reason of delay. Data was collected, tabulated, and statistically analyzed using an IBM Statistical Package for the Social Sciences (SPSS), version 20.

Results:
Out of 272 patients, 156 patients were male and 116 patients were female. Only two patients presented within 4.5 hours of onset of acute ischemic stroke, 27 patients within 13- 24 hours,44 patients within 25-72 hours and 171 patients beyond three days. Two-hundred patients first took advice from faith healer (peer), 50 patients from general practitioner and 22 patients preferred neurologist.

Conclusion:
Very few patients presented within Alteplase window. Major reason of delay was contacting faith healer first. There is necessity of awareness campaigns to overcome this hurdle and to minimize barriers for improving access to thrombolysis and specialized stroke care in Balochistan.

Key words: Hurdles, Acute ischemic stroke, Balochistan, Pre-hospital delay, Faith healer, Stroke

INTRODUCTION

Stroke is the second leading cause of death and disability throughout the world.[1] Stroke mortality is high in low and middle income countries as compared to high income countries.[2] Early recognition of stroke symptoms, diagnosis and timely management with intravenous thrombolysis within 4.5 hours significantly decreases the mortality and morbidity.[3] Treatment with intravenous alteplase, tissue plasminogen activator (rt-PA) is associated with 30% chance of improved functional outcome with complete or nearly complete neurological recovery at three months.[4]

Rate of thrombolysis all over the world is only 1-3%.[3] Pakistan has significant burden of stroke with 4-5 times more younger strokes than the western countries. Annual incidence of stroke in Pakistan is 250/100,000.[5] State of art acute stroke management with intravenous rt-PA is available in only few centers and most of them are private setup.[6] Alteplase is the registered drug in Pakistan now but unfortunately very few centers are offering intravenous thrombolysis with IV rt-PA.[6] Very small number of patients are receiving intravenous alteplase in Pakistan. A study conducted in two centers in Karachi to determine the utility of alteplase in acute stroke patients showed that only 1.5 % patients received Intravenous alteplase in Aga Khan

Hospital Karachi from 2005-2007 and 0.52% in Liaquat National Hospital Karachi over one year (2007).[7] A cross sectional survey conducted in Sheikh Zayed Hospital Lahore estimated that 7.4% of patients with acute ischemic stroke were presented within 4.5 hours and 92.6% presented beyond the window of intravenous thrombolysis.[8]

The condition is worse in Balochistan, which is the largest province of Pakistan and patients have strong belief that stroke can be treated only by dum by religious faith healers. Purpose of this study was to determine the number of patients arriving in tertiary care hospital within 4.5 hours and the factors responsible for their delayed presentation so that important strategies can be made to overcome them.

METHODS

Study Design: Prospective cross-sectional observational study.

Place and duration of study: This study was conducted in Neurology department of Bolan Medical Complex Hospital Quetta (BMCH) between June 2021 and December 2021.

Sample size: A total of 272 patients were included in this study.

Sampling technique: Non-probability consecutive sampling.

Inclusion criteria: Patients with age greater than 18 years, diagnosed with acute ischemic stroke were included in the study.

Exclusion criteria: Patients with age less than 18 years, diagnosed with cerebral venous thrombosis, evidence of intracranial hemorrhage (ICH) in the initial computed tomography (CT), presenting with symptoms or signs of subarachnoid hemorrhage, and with other acute neurological deficits (other than AIS) like multiple sclerosis and Guillain-Barré syndrome.

Data collection: All consecutive patients with the diagnosis of acute ischemic stroke admitted in neurology ward of BMCH through emergency department and outpatient department were enrolled. Informed verbal consent was taken from patient or relative. Proforma was filled by patient or family member. Proforma included sex, age, diagnosis, time of presentation after stroke and reason of delay.

Statistical analysis: Data was collected, tabulated, and statistically analyzed using an IBM Statistical Package for the Social Sciences (SPSS), version 20.

Ethical considerations: This study was approved by Ethical Committee of Bolan University of Medical and Health Sciences.

RESULTS:

Demographic data

Total of 272 patients with the diagnosis of acute ischemic stroke were included, among them 156(57.4%) were male and 116(42.3%) were female. Demographic data of recruited patients are shown in Table 1.

Table 1: Age and sex distribution (n=272)

Sex	n	Percentage
Male	156	57.4%
Female	116	42.3%

Pre-Hospital time frame

Among 272, only two patients (0.73%) presented within 4-5 hours, followed by 27 (9.9%) patients within 13- 24 hours and 44 (16.17%) patients reached hospital within 25-72 hours while most of them 171 (62.86%) patients reached hospital beyond three days. Table 2 and Figure 1 contain these results.

Table 2: Pre-hospital time frame (n=272)

Time Frame	N	Percentage
4-5 Hour	02	0.73%
13-24 hour	27	9.9%
25-72 hour	44	16.17%
27 hours to three days	171	62.86%

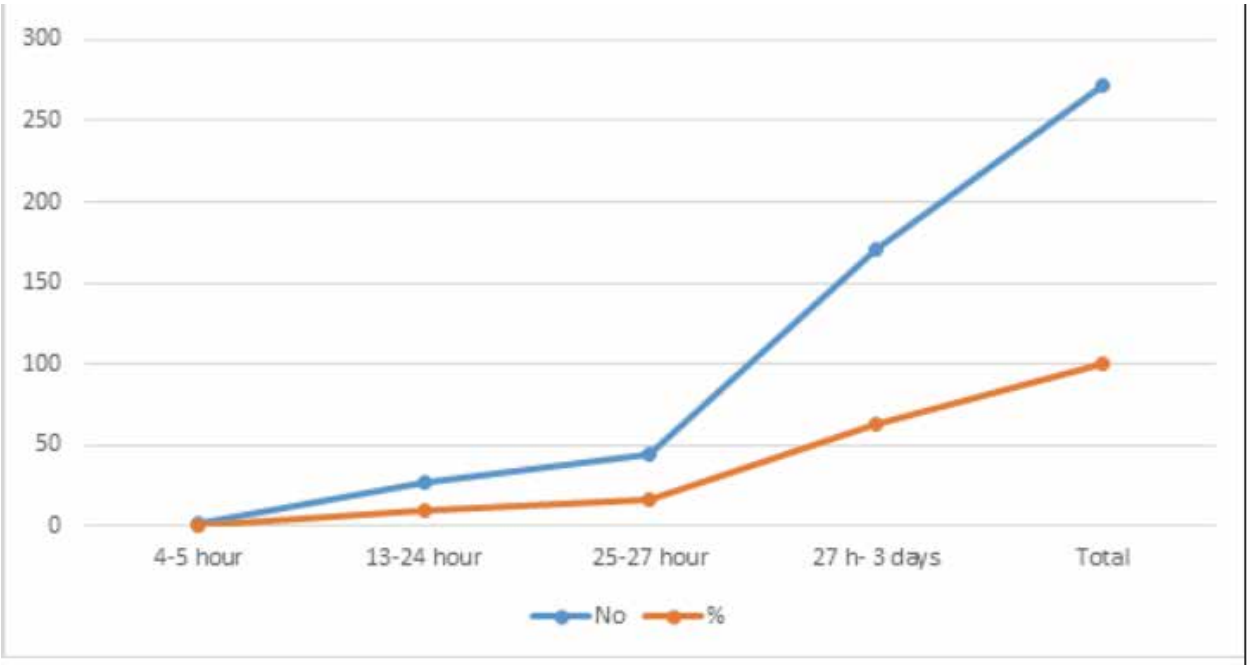

Figure 1: Pre-hospital time frame

Majority of the participants (200, 73.52%) first took advice from faith healer, 50 (18.38%) patients took advice from general practitioner while only 22(8%) patients preferred neurologist (Table No 3)

Table 3: Patients' preference for health advice

Took advice from	n	Percentage
Faith healer	200	73.52%
General practitioner	50	18.38%
Neurologist	22	8%

DISCUSSION

We are presenting the first ever data from Balochistan (province of Pakistan) to determine the barrier of intravenous thrombolysis with alteplase in acute stroke patients. Result of our study showed that there is long interval between the onset of patient's symptoms and seeking medical help. Out of 272 patients only two patients sought medical advice within 4.5 hours while 171 patients sought medical advice beyond three days. Major delay was consulting local faith healer, first for *dum* and confinement to dark room within *astana* (a place where faith healer treats stroke patient with dum). Most of the patients remained there for seven to 40 days and presented to neurology wards with early complication of stroke, mainly aspiration pneumonia. This is a very common practice exercised in Balochistan. Patients are kept usually in dark and warm rooms for a period of seven to 40 days. Patients are not allowed to wash their body with water during their stay in *astana*. Patients are kept separated from their family. During this time many patients develop complications of stroke, mostly aspiration pneumonia, bed sores and severe depression. This is extremely unique practice in Balochistan.

Major barriers to thrombolysis in low and middle income countries are inability to recognize the stroke symptoms, financial constrain and lack of infra structure.[9] Condition is same in Pakistan where few stroke centers are offering thrombolysis in acute stroke and almost all are private hospitals.[6] One study conducted in Military Hospital Rawalpindi showed that 16.8% patients reached hospital within alteplase thrombolysis window which is much higher number than our study and reasons for delay in that study were lack of awareness, low threat perception, non-availability of ambulance services and contact with local general practitioner.[10] Studies by Basharat et al and Siddiqui et al in Pakistan estimated that 21% and 28.5% patient reached hospital within three hours after acute stroke respectively.[11,12] Our study showed that in the era of new stroke perspective like intravenous thrombolysis and mechanical thrombectomy, people in Balochistan still have strong belief in faith healers. This can be overcome by extensive awareness and stroke education campaigns. Immense efforts are necessary for achieving this goal and to address the issue of consulting faith healers.

CONCLUSION

Alteplase is the only FDA approved medicine for acute ischemic stroke within 4.5 hours of the onset of symptoms. Immense efforts are needed to educate public about the fact of stroke management in Balochistan where people still seek advice from local faith healers for stroke management.

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Anjum Farooq; Concept, data analysis, manuscript writing, manuscript revision
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Nimra Shafique; Data collection, manuscript writing, manuscript revision
Sakina Gull; Data collection, data analysis, manuscript writing