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An Assessment of the Association of Presentation Time After Stroke And Mortality Admitted in A Tertiary Care Hospital in North India

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Abstract:

Objective: *To assess the association of presentation time after stroke and mortality admitted in a tertiary care hospital in north India.*

Methods*: This was a cross sectional observational study conducted in the Emergency Department in a tertiary care hospital in north India. All eligible patients clinically diagnosed as stroke (As defined by WHO. A clinical syndrome consisting of rapidly developing clinical signs of focal (or global in case of coma) disturbance of cerebral function lasting more than 24 hours or leading to death with no apparent cause other than a vascular origin) were included in this study. In hospital mortality was noted.*

Results: *More than half of the patients presented after ≥6 hours (62.7%) and 37.3% patients presented within 6 hours after stroke. The mortality was significantly (p=0.02) higher among the patients who presented after ≥6 hours (24.2%) compared to those who presented within 6 hours (11%). The risk of mortality was 1.33 time higher who presented after ≥6 hours compared to those who presented within 6 hours (RR=1.33, 95%CI=1.10-1.33).*

Conclusion: *A high mortality rate was found who presented after ≥6 hours. This shows that there should be interventions for the community to make aware about the timely reaching to the hospital resulting to low mortality of stroke patients.*

Keywords: *Ischemic stroke, Delay, Mortality*

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I. Introduction

Stroke is a leading cause of morbidity and mortality worldwide, with an estimated 5.7 million deaths and approximately 50 million disability-adjusted life years lost every year (Strong et al, 2007). Urgent treatment with intravenous thrombolysis using alteplase for acute ischemic stroke can markedly improve patient outcomes for eligible patients. In India, it is attaining an epidemic proportion, and at the current time, the population in India is projected to have over 1 million strokes per year (Mehndiratta et al, 2013). It is very well known that brain ischemia persisting for more than 4 to 6 h will produce permanent neurological damage. There is a considerable delay in patients with stroke symptoms reaching the hospital. Recently, a study showed that only less than half the people reached the hospital within 24 hours of the symptoms onset (Wielgosz et al, 1988). In today's era, the time taken by the patient to reach the hospital must be speeded up in order to decrease the morbidity and mortality caused by the stroke. The present study was conducted to assess the association of presentation time after stroke and mortality admitted in a tertiary care hospital in north India.

II. Material And Methods

This was a cross sectional observational study conducted in the Emergency Department of RML Institute of Medical Sciences, Lucknow, UP, India. The study was approved by the Ethical Committee of the Institute. The consent was taken from each participant/attendant before enrolling in the study.

All eligible patients clinically diagnosed as stroke (As defined by WHO. A clinical syndrome consisting of rapidly developing clinical signs of focal (or global in case of coma) disturbance of cerebral function lasting more than 24 hours or leading to death with no apparent cause other than a vascular origin) were included in this study. Likelihood of stroke was established by ROSIER SCALE and CT scan of brain (plain) which was performed in all the patients. Detail demographic and clinical history was taken. Mode of onset, progression since onset and associated symptom were noted. Proper general, physical and systemic clinical examinations was done as per clinical Performa and NIH STROKE SCALE –NIHSS was used for neurological assessment**.** The time taken from onset of symptom and reaching to the hospital was recorded. In hospital mortality was assessed.

III. Statistical analysis

The results are presented in frequencies and percentages. The Chi-square test was used to assess the association. The relative risk (RR) with its 95% confidence interval (CI) was calculated to find the strength of association. The p-value<0.05 was considered significant. All the analysis was carried out on SPSS 16.0 version (Chicago, Inc., USA).

IV. Results

More than half of the patients presented after ≥6 hours (62.7%) and 37.3% patients presented within 6 hours after stroke. The mortality was significantly (p=0.02) higher among the patients who presented after ≥6 hours (24.2%) compared to those who presented within 6 hours (11%). The risk of mortality was 1.33 time higher who presented after ≥6 hours compared to those who presented within 6 hours (RR=1.33, 95%CI=1.10-1.33) (Table-1).

V. Discussion

Patients experienced a range of out-of-hospital delays: (1) primary delays because of lack of stroke recognition or appropriate response to them; (2) secondary delays because of initially contacting a nonemergency health service; and (3) tertiary delays, in which the health service did not recognize the stroke. Previous studies have focused on primary patient-related delays slowing down stroke patients' route to the hospital (Jones et al, 2012; Moloczij et al, 2008). Medical treatment of acute stroke with thrombolytics has recently become available in India. Start of treatment in the narrow therapeutic time window is crucial for successful treatment with these agents. The therapeutic window is less than 3 hours for thrombolytic agents and the best results may be attained with administration within 90 minutes. Recombinant tissue plasminogen activator (r-tPA) has been approved in USA for acute stroke treatment within a 3 hours time frame (The NINDS r-tPA Stroke Study Group, 1995; Hacke et al, 1995). However, it has been seen that patients with acute stroke are often admitted late. In the present study, more than half of the patients presented after ≥6 hours (62.7%) and 37.3% patients presented within 6 hours after stroke. This finding is comparable to studies performed in other countries (Kay et al, 1992; Alberts et al, 1990).

Stroke is the third commonest cause of death and a leading cause of severe long-term disability in the United States of America (USA), trailing only heart disease and cancer (Mullings, 2006). In the present study, the mortality was significantly (p=0.02) higher among the patients who presented after ≥6 hours (24.2%) compared to those who presented within 6 hours (11%). In the best knowledge of the researchers, this is first kind of study which correlated the time of presentation with the in hospital mortality, hence, comparison could not be done.

VI. Conclusion

A high mortality rate was found who presented after ≥6 hours. This shows that there should be interventions for the community to make aware about the timely reaching to the hospital resulting to low mortality of stroke patients.

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Table-1: Comparison Of Presentation Time After Symptom Of Onset And Mortality

Time of presentation	No. of patients		Death		Alive		RR (95%CI)	p-value[1]
	No.	%	No.	%	No.	%		
≥6 hours	153	62.7	37	24.2	116	75.8	1.33 (1.10-1.33)	0.02*
<6 hours	91	37.3	10	11.0	81	89.0	1.00 (Ref.)	
Total	244	100.0	47	19.3	197	80.7		

[1]Chi-square test, RR-Relative risk, CI-Confidence interval, Ref.: Reference, *Significant

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