

Time of presentation of stroke patients in a tertiary hospital in Northern Nigeria, West Africa

Ekeh B, Isamade EI¹

Department of Internal Medicine, University of Uyo Teaching Hospital, Uyo, ¹Jos University Teaching Hospital, Jos, Nigeria

Abstract

Background: The management of stroke had a radical change in the last decade. This revolution followed the finding that carefully selected patient with acute ischemic stroke can benefit from thrombolytic therapy. The drug has to be given within 3 hours of the stroke to be of benefit. Administration of the drug later than this does not have much impact on the outcome. We, therefore, undertook this study to determine the time of presentation of our patients with stroke. This will establish the practicality of thrombolytic therapy in our practice. **Objective:** The aim of this study was to observe the time of presentation of stroke patients in a tertiary hospital in Nigeria. **Materials and Methods:** The time of presentation of 128 stroke patients admitted into the medical wards of Jos University Teaching Hospital was recorded. **Results:** There were only 13 (10.1%) patients who presented within the stipulated 3 hours for acute intervention. The median time and mode was 'after 3 hours but within the first day.' **Conclusion:** We found that our stroke patients presented late to the hospital. Most of our patients will not benefit from the recent modalities of management even if available. There is need for public education and enlightenment on stroke, risk factors, symptoms, and the need for early presentation after a stroke.

Key words: Nigeria, Presentation, Stroke, Time

INTRODUCTION

Management of stroke has changed dramatically in the last decade. This significant advance was made possible by the NINDS rt-PA study group, which first reported that early administration of recombinant tissue plasminogen activator (rt-PA) benefitted some carefully selected with acute ischemic stroke.^[1] Based on this, stroke has become a treatable disease. Stroke is called brain attack and is been regarded as such.^[2] The primary goal of managing a patient with acute stroke is to minimize the amount of brain damage. Central to this objective is the element of time. The phrase "Time is neurons" emphasizes that human nervous tissue is rapidly and irretrievably lost as stroke progresses. Therapeutic interventions should, therefore, be

pursued as an emergency.^[3] It has been shown that every minute, in which a large vessel ischemic stroke is untreated, the average patient loses 1.9 million neurons, 13.8 billion synapses, and 12 km (7 miles) of axonal fibers.^[4] Each hour, in which treatment fails to occur, the brain loses as many neurons as it does in almost 3.6 years of normal aging.^[4] Early treatment, therefore, is crucial in maximizing the benefit of stroke intervention. Effective thrombolytic therapy has been shown to be dependent on timely intervention.^[5-8] Therefore, guidelines for the use of recombinant tissue plasminogen activator recommend therapy within 3 hours after onset of stroke symptoms.^[1] What more, studies suggest that cerebral ischemia persisting for more than 6 hours results in permanent neurological damage.^[9] Early hospital arrival is critical to successful management of the stroke patient. Patients should have a CT scan within 90 minutes to confirm the diagnosis of stroke and more importantly rule out hemorrhagic stroke before the administration of rt-PA.^[2]

There is, therefore, a need to ascertain the time of presentation of stroke patients to the health facility. This will determine the practicality of current modalities of stroke management, which include thrombolytic therapy in that health facility. This is because late arrival at the health facility makes the current

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Address for correspondence:

Dr. Bertha Chioma Ekeh, Department of Internal Medicine, University of Uyo Teaching Hospital, PMB 1136, Uyo, Nigeria. E-mail: berthacekeh@yahoo.com

management non-effective since the benefit of thrombolytic therapy after 6 hours has not been established. Studies carried out in different centers all over the world show that the time has not been optimal in most hospitals. One study showed that 32% of the patients arrived within 1.5 hours, 46% within 3, and 61% within 6 hours.^[10] Another study showed that 18% arrived within 90 minutes of stroke onset with 54% in 6 hours.^[11] Others showed mean arrival time of 4.5^[7] and 5.4 hours^[12] This is even later in the developing countries as shown by a study in Brazil where the average time from initial symptom until hospital arrival was 18 hours, 46 minutes.^[13] Studies in Nigeria have been few. One showed a median presentation time of 3 days.^[14]

This study is a prospective study to determine the time of presentation of stroke patients in a Nigerian teaching hospital. Knowledge of the time of presentation will be of immense benefit in health planning in the health facility and thereafter in the country as a whole.

MATERIALS AND METHODS

This is a prospective study carried out in the Jos University Teaching Hospital in Nigeria to examine the time of presentation of patients with stroke. Jos is the capital of Plateau state, which is located in the north central Nigeria. This hospital serves as the referral center in the state and also for nearby states in north central Nigeria. The study was carried out between January and December 2006. The participants were one hundred and twenty eight patients who were admitted into the medical wards of the hospital with stroke. Stroke was defined as “rapidly developing signs of focal or global neurological disturbance of function leading to death or lasting longer than 24 hours with no other cause other than vascular.”^[15]

All consecutive patients with acute stroke who were more than 16 years and gave an informed consent were recruited for the study. The diagnosis was made clinically. Patients, who had transient ischemic attack and head trauma, were excluded. The ‘WHO criteria’ was used to sub-type the stroke.^[16] Few patients, however, who could afford CT scan in the nearby centers, were confirmed by same to validate the diagnosis. The time of presentation of the participants was recorded as they presented at the hospital. Time was recorded in hours, days, or weeks.

RESULTS

There were 128 participants in all comprising 80 (62.5%) males and 48 (37.5%) females. The age range was 18-85 with a mean

age of 57 ± 15.3 years. The median age was 55 years, and the mode was 65 years. Of the 128 patients, 89 (69.5%) had likely ischemic stroke while 34 (26.6%) had likely hemorrhagic stroke. Five (3.9%) patients had undetermined stroke. Table 1 shows the age and sex distribution of the different categories of presentation time while table 2 summarizes the relationship between time to presentation and educational status of the patients. Neurological features noted were impaired consciousness in 29 (22.7%), aphasia in 20 (15.6%), and cranial nerve deficits in 96 patients (75%). One hundred and eighteen patients (92.2%) had hemiparesis. Seven patients who had a previous contra-lateral stroke had quadriplegia. Only 3 patients had no limb weakness at all. Thirteen patients had sensory loss, and 1 patient had hyperesthesia. Figure one shows the proportion of stroke patients presenting in each time category. The median time and mode were “more than 3 hours but within one day.”

DISCUSSION

Most of the patients with acute stroke presented late to the hospital with only 10.2% of the patients arriving within 3 hours of the stroke. This late presentation was noted irrespective of their age, sex, or educational status. Ignorance is presumed to be largely responsible. Anecdotal reports show that stroke is still regarded as a spiritual disease in Africa. For this reason, the patients prefer to seek care elsewhere. This may be in the church, spiritual healer, or the traditional healing homes. In one study in Nigeria, 19% of the patients were withdrawn from the hospital against medical advice.^[17] These patients most likely were taken to another place for treatment.

There is need to create an awareness of stroke as a medical disease, which can be prevented and also managed in the hospital.

The second reason for the late presentation may be inaccessibility to health care facilities. It has been estimated that 80% of the population of a developing country like Nigeria live in rural areas and lack access to western-type hospitals, but rather seek care from traditional healers, churches, and others.^[18] Some of the persons who seek care elsewhere will be patients with stroke. Other factors contribute to the health-seeking behavior. Cardinal amongst them is the cost of healthcare in Nigeria. A good number of Nigerians live below the poverty level and are unable to afford proper hospital care. Besides, some patients need their children or

Table 1: Age and Sex Distribution of the patients

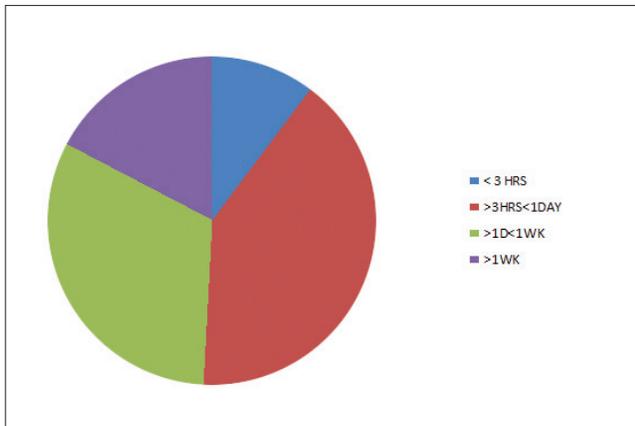
Time	<40		40-49		50-59		60-69		≥70		Total		Total
	m	f	m	f	m	f	m	f	m	f	m (%)	f (%)	
<3h	1	2	2	3	0	0	2	0	3	0	8 (61.5)	5 (38.5)	13
<3h >1d	3	2	5	1	10	8	7	6	8	2	33 (63.5)	19 (36.5)	52
<3h >1d	4	4	3	4	6	2	4	3	7	4	24 (58.5)	17 (41.5)	41
>1w	3	1	3	1	1	2	4	2	4	1	15 (66.2)	7 (33.8)	22
Total	11	9	13	9	17	12	17	11	22	7	80 (62.5)	48 (37.5)	128

P>0.2

Table 2: Educational status and time of presentation

Time	Nil (%)	Primary (%)	Secondary (%)	Tertiary (%)	Total
<3 hrs	3 (23.08)	3 (23.08)	3 (23.08)	4 (30.76)	13
>3 hrs <1 d	17 (32.7)	19 (36.5)	12 (23.1)	4 (7.7)	52
>1 day <1 wk	12 (29.3)	9 (21.9)	10 (24.4)	10 (24.4)	41
>1 wk	10 (45.5)	4 (18.2)	5 (22.7)	3 (13.6)	22
Total	42	35	30	21	128

P>0.2

**Figure 1: Time of presentation**

other relatives to come from the city with money before they can be taken to hospital.

Poor transport facilities especially at night when patients have stroke is another contributing factor. It is important to note that most stroke patients are unable to make their decisions. In the Nigerian society with the extended family system, some other people may be consulted before the patient is taken to the hospital. This process will cause further delay in the presentation at the hospital. Most of these patients, therefore, will be unable to benefit from emergency care.

Studies from other parts of the developing world show a similar trend. In a study carried out in Sao Paulo in Brazil, there were 59 patients in all. The average time from the initial symptom until hospital arrival was 18 hours 46 minutes.^[13] Sixteen (27.1%) patients looked for medical care > 48 hours after the ictus. Fourteen (23.7%) could not tell the time of the first symptom. Seventeen (28.8%) patients arrived at the medical service within 3 hours of the beginning of the deficit and 19 (32.02%) within 6 hours.^[13] Studies in the developed world showed earlier times of presentation^[10,11] though still not ideal. Important factors that have been associated with early presentation included major stroke compared to minor stroke. Time of onset (afternoon as against night time) was also important. Patients using emergency medical services had shorter delay.^[9]

It is worthy of note that educational status had no impact on the time of presentation in our study. Presentation was late

irrespective of the level of education. The inference is that western education does not necessarily translate to awareness and knowledge of medical diseases. This will suggest a need for more work in the area of public health education and enlightenment. Interestingly, public education has been shown to be of immense benefit with the percentage of those who arrived within 24 hours increasing from 37% to 86% since the beginning of education efforts in one study.^[10] Components of the public education in our setting will include awareness of stroke as a medical disease, knowledge of the risk factors with emphasis on the modifiable risk factors, recognition of the symptoms of stroke, and the need for immediate presentation to the hospital.

Finally, at the time of this study, the study center did not have a CT scan. This hampered the diagnosis and subsequent management of the patients albeit supportive. There is need to equip our hospitals to the level that will benefit stroke patients. Each teaching hospital should have a stroke unit designated for patients with stroke. It is also important to procure modern imaging modalities, medications, neurosurgical unit, and intensive care support. This will be of immense help in the management of the few knowledgeable persons who will present early enough for timely intervention. The prompt diagnosis and emergency care when successful will be a boost to the enlightenment campaign.

CONCLUSION

We found that most of our patients presented very late after the stroke. This late presentation to the hospital is common place in the practice of medicine in the developing countries. This lateness interferes with the acute management contributing immensely to the high mortality. In the event of availability of current modalities of management of stroke like CT scan and thrombolytic therapy thereafter, effective management of stroke patients will be hampered by delayed presentation. The need for public education and enlightenment campaigns cannot be overemphasized. Meanwhile, it is essential to furnish our hospitals to the point of effective stroke care as is seen worldwide.

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