

## THE PATTERN OF NEUROLOGICAL ADMISSIONS AT THE LAGOS UNIVERSITY TEACHING HOSPITAL

F. I. Ojini, M. A. Danesi

Department of Medicine, College of Medicine, University of Lagos, Lagos, Nigeria.

### ABSTRACT

**Objective:** To determine the profile of neurological admissions at the Lagos University Teaching Hospital.

**Methods:** Neurological admissions at the Lagos University Teaching Hospital, Lagos, Nigeria, between 1995 and 1999 were reviewed, using medical records.

**Results:** Neurological admissions accounted for 19.63% of total medical admissions. Cerebrovascular diseases were the most common cause, accounting for 11.65% of medical admissions; followed by infections of the nervous system which made up 6.07%. Cerebral malaria, pyogenic meningitis and tetanus were the most common infections. All the other neurological diseases constituted less than 2% of medical admissions.

On the whole, non-communicable neurological disorders accounted for 13.56% while infections of the nervous system accounted for 6.07% of the total medical admissions.

**Conclusion:** Stroke is the commonest cause of neurological admissions at the Lagos University Teaching Hospital; and it is now more frequent than infections of the nervous system.

**KEYWORDS:** *Neurological admissions, Medical admissions, Lagos University Teaching Hospital.*

### INTRODUCTION

Neurological illnesses constitute a significant proportion of patients admitted into hospitals, and contribute a major burden on health care resources<sup>1</sup>. In some communities, it is estimated that around 10 percent of the adult population consult their general practitioner each year with neurological symptoms, and that neurological disorders account for 10 to 20 percent of acute hospital admissions<sup>2</sup>.

Neurological diseases have been described from different parts of Africa<sup>3,4,5,6</sup>. In a retrospective study of 75 cases of neurological disease seen at Kenyatta National Hospital, Nairobi, meningitis was the commonest disorder<sup>5</sup>. Dada *et al*<sup>6</sup>, reported that tetanus was the commonest neurological admission at the Lagos University Teaching Hospital, Lagos, between 1962 and 1967. However, in recent years, a pattern of a decreasing frequency of infections of the nervous system and increasing frequency of non-communicable neurological disorders (especially cerebrovascular diseases) has been reported from some parts of Africa<sup>7,8</sup>. This paper reviews recent neurological admissions at the Lagos University Teaching Hospital, in order to determine any changes in the profile of neurological diseases at the hospital, and also to draw attention to the common neurological illnesses requiring hospital admission.

### MATERIALS AND METHOD

This was a retrospective review of neurological admissions into the medical wards of the Lagos University Teaching Hospital, Lagos, over a five-year period from January 1995 to December 1999. The teaching hospital serves as a tertiary referral centre for the metropolis of Lagos and neighbouring surroundings, and has two male and two female medical wards. Patients are admitted into the medical wards either from the accident and emergency department of the hospital, or from the medical outpatient clinics. Only 'adult' patients, usually those more than 12 years old, are admitted into the medical wards. The age limit is purely arbitrary, and in some instances, patients less than 12 years of age who are too big to occupy paediatric beds, are admitted into the medical wards. The provisional diagnosis is recorded on admission for each patient, and on discharge (or death), the final diagnosis is similarly documented.

Records of all patients admitted with neurological diagnoses were reviewed. The number of neurological admissions, and the specific neurological diagnoses during the period under review were obtained. The neurological diagnoses were grouped into the following categories:

- Cerebrovascular diseases
- Infections of the nervous system
- Seizure disorders
- Spinal cord diseases

\*Correspondence: Dr. F. I. Ojini

Intracranial space-occupying lesions  
 Degenerative disorders of the nervous system  
 Peripheral neuropathies  
 Headache disorders  
 Neuromuscular diseases  
 Dyskinesias  
 Cerebellar diseases  
 Encephalopathies  
 Neuropsychiatric disorders

## RESULTS

Over the five-year period, a total of 6,677 patients were admitted into the medical wards of the Lagos University Teaching Hospital. Out of this, 1,311 (19.63%) patients had neurological disorders (Table 1). There were 785 males and 526 females, giving a male to female ratio of 1.49 to 1. The ages of the patients were between 10 years and 92 years, with a mean age of 46.6±19.8 years. The age range was 10 to 90 years with a mean age of 45.9±19.1 years for males, and 10 to 92 years with a mean age of 47.8±20.7 years for females. Table 2 shows the age and sex distribution of the patients with neurological disorders. The highest number of cases of neurological admissions was in the 50 to 59 years age group for males, and 60 to 69 years age group for females.

**Table 1: Neurological and total medical admissions at the Lagos University Teaching Hospital**

Years	Neurological admissions	Total medical admissions	Neurological admissions as percentages of total medical admissions
1995	220	1287	17.09%
1996	293	1444	20.29%
1997	283	1501	18.85%
1998	282	1344	20.98%
1999	233	1101	21.16%
<b>1995 to 1999</b>	<b>1311</b>	<b>6677</b>	<b>19.63%</b>

The different categories of neurological diagnoses are shown in Table 3. Cerebrovascular diseases accounted for 11.65% of the total medical admissions for this period. These were followed by infections of the nervous system, which made up 6.07% of the medical admissions. The other neurological diseases made up less than 2% of the total admissions.

Table 4 shows the specific diagnoses under the category of cerebrovascular diseases; showing that stroke (cerebral infarction and cerebral haemorrhage) was the most common

**Table 2: Age and sex distribution of patients with neurological disorders**

Age groups in years	Number of patients		
	Males	Females	Total
10-19	97	75	172
20-29	95	65	160
30-39	88	39	127
40-49	124	66	190
50-59	153	86	239
60-69	127	117	244
70-79	88	58	146
80-89	12	17	29
90-99	1	3	4
	<b>785</b>	<b>526</b>	<b>1311</b>

**Table 3: Categories of neurological diagnoses at the Lagos University Teaching Hospital**

Neurological diagnoses	Number of patients	Percentage of neurological admissions (n=1311)	Percentage of total medical admissions (n=6677)
Cerebrovascular diseases	778	59.34%	11.65%
Infections of the nervous system	405	30.89%	6.07%
Seizure disorders	37	2.82%	0.55%
Spinal cord diseases	34	2.59%	0.51%
Intracranial space-occupying lesions	16	1.22%	0.24%
Degenerative disorders	11	0.84%	0.16%
Peripheral neuropathies	9	0.69%	0.13%
Headache disorders	5	0.38%	0.07%
Neuromuscular diseases	4	0.31%	0.06%
Dyskinesias	4	0.31%	0.06%
Cerebellar diseases	3	0.23%	0.05%
Encephalopathy	3	0.23%	0.05%
Neuropsychiatric disorders	2	0.15%	0.03%
<b>Total</b>	<b>1311</b>	<b>100%</b>	<b>19.63%</b>

neurological diagnosis accounting for 54.54% of neurological admissions and 10.71% of total medical admissions. Cerebral malaria was the next most common neurological admission making up 10.22% of neurological admissions and 2.01% of total medical admissions; followed by pyogenic meningitis with 8.47% and tetanus with 8.01% of neurological admissions (1.66% and 1.57%

of total medical admissions respectively) (Table 5).

On the whole, non-communicable neurological disorders predominated, constituting 13.56%, while infections of the nervous system made up 6.07%, of medical admissions at the Lagos University Teaching Hospital during the period under review.

**Table 4: Occurrence of the specific types of cerebrovascular diseases**

Type of cerebrovascular disease	Number of patients	Percentage of neurological admissions (n=1311)	Percentage of total medical admissions (n=6677)
*Stroke	715	54.54%	10.71%
Hypertensive encephalopathy	37	2.82%	0.55%
Transient ischaemic attack	16	1.22%	0.24%
Subarachnoid haemorrhage	10	0.76%	0.15%
<b>Total</b>	<b>778</b>	<b>59.34%</b>	<b>11.65%</b>

\*Cerebral infarction and cerebral haemorrhage

**Table 5: Occurrence of the different types of infections of the nervous system**

Type of infection	Number of patients	Percentage of neurological admissions (n=1311)	Percentage of total medical admissions (n=6677)
Cerebral malaria	134	10.22%	2.01%
Pyogenic meningitis	111	8.47%	1.66%
Tetanus	105	8.01%	1.57%
Tuberculous meningitis	23	1.75%	0.34%
Cerebral abscess	14	1.07%	0.21%
Encephalitis	12	0.91%	0.18%
Rabies	5	0.38%	0.08%
Tuberculoma	1	0.08%	0.02%
<b>Total</b>	<b>405</b>	<b>30.89%</b>	<b>6.07%</b>

## DISCUSSION

This study showed that 19.63% of admissions into the medical wards of the Lagos University Teaching Hospital from 1995 to 1999 were for neurological disorders. This is consistent with the estimates of neurological admissions in similar studies<sup>2,8</sup>. Ogun *et al*<sup>8</sup>, in their study of the pattern and outcome of medical admissions at the Ogun State University Teaching Hospital, Shagamu (in the same South-western region of Nigeria as the Lagos University Teaching Hospital) over the three-year period of 1994 to 1996, found a frequency of 19.6% for neurological admissions.

Stroke accounted for the bulk of neurological admissions in this study, making up 10.71% of total medical admissions. This disorder had been said in the past, to be rare in Africans<sup>9</sup>, but more recently, several investigators have established that stroke is a major medical problem in African communities<sup>10,11,12</sup>. It was the third commonest cause of medical admissions (8.7% of medical admissions) at the Ogun State University Teaching Hospital, Sagamu, Nigeria<sup>8</sup>, and accounted for 8% of admissions to the medical unit in Korle-Bu Teaching Hospital, Accra, Ghana<sup>10</sup>.

The profile of neurological admissions at the Lagos University Teaching Hospital appears to have changed from that reported by Dada *et al*<sup>6</sup> for the period 1962 to 1967. While tetanus was the commonest neurological admission and infections of the nervous system predominated over non-communicable neurological disorders (such as stroke, epilepsy, polyneuropathy and Parkinson's disease) during that period, the present study found that stroke had overtaken tetanus as the commonest neurological admission at the hospital, and that non-communicable disorders now appear to predominate over infections of the nervous system (such as tetanus, meningitis and encephalitis). This changing profile of neurological admissions is mainly due, both to an increase in stroke cases and a decrease in tetanus cases, over the years. Out of a total of 1,200 neurological admissions between 1962 and 1967, there were 450 tetanus cases, while of the total of 1,311 neurological admissions between 1995 and 1999; there were 105 cases of tetanus. On the other hand, the number of stroke patients increased from 205 to 778 for the same periods. A similar finding was recently reported by Ogun *et al*<sup>8</sup> who noted a lower frequency of tetanus and a higher frequency of strokes at the Ogun State University Teaching Hospital, compared with earlier reports<sup>13,14</sup> from some hospitals in the same South-western region of Nigeria.

Improvements in preventive strategies such as immunisation, health education, proper treatment of wounds and widespread availability of antibiotics appear to be making an impact on the incidence of tetanus (and possibly other neurological infections).

Neurological admissions at the Lagos University Teaching Hospital fall into two categories: conditions like neurological infections that can be managed by non-neurologists, or those like stroke, spinal cord diseases and intracranial space-occupying lesions where early referral to a neurologist or neurosurgeon might make a difference in the outcome.

This study showed that almost a third of neurological admissions in the period under review, were due to treatable infections of the nervous system such as meningitis and cerebral

malaria. Many of these infections can be dealt with by general practitioners and physicians without specialist neurological training. On the other hand, proper management of strokes, seizure disorders, spinal cord diseases and intracranial space-occupying lesions requires early referral to a neurologist or neurosurgeon.

The case of stroke deserves special consideration. Over half of the neurological admissions in the hospital during the period under review were stroke patients. It is obvious that there is a need to focus attention on this huge burden of stroke, with a view to achieving optimal care within the available financial and manpower resources, and also instituting appropriate preventive strategies.

## REFERENCES

1. **Marsden CD.** Neurology: introduction. In: Weatherall DJ, Ledingham JGG and Warrell DA, editors. Oxford Textbook of Medicine. 2<sup>nd</sup> ed., Oxford; Oxford University Press, 1987: 21.1
2. **Larner AJ, Farmer SF.** Recent advances: Neurology. *BMJ* 1999; 319: 362–366.
3. **Hutton PW.** Neurological disease in Uganda. *E Afr Med J* 1956; 33: 209–233.
4. **Haddock DRW.** Neurological disorders in Tanzania. *J Trop Med Hyg* 1965; 68: 161–166.
5. **Ojiambo HP.** Neurological disease at Kenyatta National Hospital, Nairobi: a retrospective study of 75 cases. *E Afr Med J* 1966; 43: 366–376.
6. **Dada TO, Johnson FA, Araba AB, Adegbite SA.** Cerebrovascular accidents in Nigerians—a review of 205 cases. *W Afr Med J* 1969; 18: 95–108.
7. **Kwasa TOO.** The pattern of neurological disease at Kenyatta National Hospital. *E Afr Med J* 1992; 69: 236–239.
8. **Ogun SA, Adelowo OO, Familoni OB, Jaiyesimi AEA, Fakoya EAO.** Pattern and outcome of medical admissions at the Ogun State University Teaching Hospital, Sagamu – a three-year review. *W Afr J Med* 2000; 19: 304–308.
9. **Humphries SV.** A study of hypertension in the Bahamas. *S Afr Med J* 1957; 31: 694–699.
10. **Haddock DRW.** Cerebrovascular accidents in Ghana. *Trans Roy Soc Trop Med Hyg* 1970; 64: 300–310.
11. **Osuntokun BO.** Stroke in the Africans. *Afr J Med Sci* 1977; 6: 39–53.
12. **Matenga J, Kitai I, Levy L.** Strokes among black people in Harare, Zimbabwe: results of computed tomography and associated risk factors. *BMJ* 1986; 292: 1649–1651.
13. **Lauckner JR, Rankin AM, Adi FC.** Analysis of medical admissions to University College Hospital, Ibadan-1958. *W Afr Med J* 1961; 10: 3–32.
14. **Ogunmekun GO.** Analysis of medical admissions to Adeoyo State hospital, Ibadan-1969. *Nigeria Medical Journal* 1973; 3: 5–12.