

The Spectrum of Neurological Pathologies at the Neurology Unit of the Jean Paul II Hospital in Conakry

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ABSTRACT

Introduction: Neurological diseases are defined by lesional damage to the brain, spinal cord, peripheral nerves or muscles. They are multiple and varied.

Objective: Determine the profile demographic, clinical and evolution of patients hospitalized in the neurology unit of the John Paul II hospital.

Material and Methods: This was a prospective descriptive study lasting 1 year carried out at the Neurology unit of the Jean Paul II hospital, in the suburbs of the capital Conakry. All medical records were reviewed by a neurologist and neurological diagnoses classified according to ICD-10.

Results: Out of 215 patients received, 182 (84.7%) received a neurological diagnosis. The average age of the patients was 57.7 ± 17.1 years with a male predominance of 53.4%. The most frequent reasons for consultations were motor deficit (85.16%) and language disorders (58.24%). According to the ICD-10 classification, episodic and paroxysmal disorders (EME, epilepsy, cerebrovascular disorders) were observed in 82% of patients, followed by inflammatory diseases of the central nervous system in 7.3% of patients.

Conclusion: Neurological pathologies constitute a major public health problem and represent the leading cause of years lived with disability worldwide.

Keywords

Epilepsy, John Paul II Hospital, Spectrum.

Introduction

Neurological diseases are defined by damage to the brain, spinal cord, peripheral nerves or muscles. Often chronic, disabling. They involve significant medico-social care [1]. According to the 2016 Global Burden of Disease Study, neurological conditions were the leading cause of years lived with disability worldwide, affecting 276 million people [2]. Worldwide, more than one in nine people die from a neurological condition, the prevalence and impact

of which is generally higher in low-income countries with an etiological pattern favoring infections of the central nervous system (CNS) [3]. The global epidemiological transition has resulted in a shift in the disease pattern from dominance of infectious diseases to dominance characterized by non-communicable diseases [4,5].

There are more than 600 diseases of the nervous system and the most common neurological conditions are epilepsy, Alzheimer's disease and other dementias, migraine, multiple sclerosis, neuroinfections, Parkinson's disease, strokes, brain tumors, traumatic brain injuries and neurological disorders linked to

malnutrition [6]. Among them, stroke represents the second cause of death in developing countries and Africa, has one of the highest stroke rates with a prevalence of 1460 cases per 100,000 people [7,8]. Of the 50 million epilepsy patients worldwide, 75% live in developing countries and 94% of them do not have access to antiepileptic drugs [7]. Long considered incurable, neurological diseases have benefited over the past ten years from a range of new treatments which contribute to improving the quality of life of patients [9]. The overall burden of neurological pathologies in hospitals in Africa is significant, accounting for up to 20% of medical admissions [10,11].

In these countries, the average ratio of neurologists to the general population is on the order of 1:3.5 million, with 11 countries reporting no neurologists. For comparison, the ratio between neurologists and the general population in the United States is 1:26,200, which highlights both the need for neurological care and the obstacles to defining neurological disease [12]. The prevalence of pathologies is such that everyone has had an affected person in their family or friends [13]. However, we cannot help but note the striking contrast between the presence of these diseases in society and the lack of knowledge of what they are, their causes, their mechanisms and therapeutic perspectives. Therapeutic strategies attempt to respond through their diversity to the range of symptoms of these diseases. But despite the prodigious progress in neuroscience, we talk more about symptomatic treatments, about adaptation to preserve autonomy, than about healing [14].

Neurological pathologies have a devastating effect on patients, as they represent the leading cause of disability and the second leading cause of death worldwide and the most common are associated with social stigma, which constitutes a major barrier in identification, patient care and counseling [5,15].

Objective of study

To determine the profile s demographic, clinical and evolution of patients hospitalized in the neurology unit of the Jean Paul II hospital in Conakry.

Methods

This is a prospective, descriptive study lasting 12 months from July 1, 2021 to June 1, 2022. Carried out in the neurology unit of the Jean Paul II hospital in Conakry, which is a secondary hospital in the suburbs of the capital of the Republic of Guinea. We carried out an exhaustive recruitment of all patients hospitalized during the study period and who met the selection criteria, namely: the presence of disorders of neurological origin and those who agreed to participate in the study. Excluded were head injury patients with no neurological signs or symptoms and those with non-neurological back pain.

For data collection, we used a pre-established survey form and patients' hospitalization records. The following data were collected from these patients: age, sex, history, main complaint of the consultation, diagnosis and clinical evolution of the pathology. We were also interested in the complications encountered in patients.

We classified neurological diseases according to the 10th revision of the International Classification of Diseases as follows [2]:

(1) Inflammatory diseases of the central nervous system, (2) Systemic atrophies primarily affecting the central nervous system, (3) Extrapyramidal and movement disorders, (4) Other degenerative diseases of the nervous system, (5) Demyelinating diseases of the central nervous system, (6) Episodic and paroxysmal disorders, (7) Disorders of nerves, nerve roots and plexuses, (8) Polyneuropathies and other disorders of the peripheral nervous system, (9) Diseases of the myoneural junction and muscles, (10) Cerebral palsy and other paralytic syndromes, (11) Other nervous system disorders. The diagnoses were made clinically with radiological and biological confirmation. Laboratory tests depended on the suspected neurological diagnostic process and included: complete blood count, ESR, serum biochemistry, serologic testing, and microbiology. A lumbar puncture when indicated. The radiological tests were CT scan (brain and spine), spinal X-ray, rarely MRI due to its high price. Electrophysiological tests included: electroencephalography (EEG), electroneuromyography (ENMG) and electrocardiography (ECG). Viral studies, histochemistry and other high-tech neurological investigative tools were not used for the diagnosis of these patients because the cost was exorbitant. Statistical analyzes were carried out using Epi Info software version 7.2.5. Quantitative variables were presented as mean \pm standard deviation and qualitative variables as percentages. The study protocol was submitted for approval to the hospital ethics council. All information that was obtained was used for purely scientific purposes and confidentiality was applied throughout the study period. Informed consent was obtained from all patients.

Results

In the period from July 1, 2021 to June 1, 2022, a total of 215 patients were hospitalized in the neurology department of John Paul II, of whom 182 (84.7%) received a neurological diagnosis. Excluded were head injury patients with no neurological signs or symptoms and those with non-neurological back pain.

Repair by age and sex: The distribution by sex of the patients was 94 (53.4%) men versus 88 (48.35%) women, which gives a sex ratio of 1.06 . Patient age ranged from 1 to 95 years with a mean of 57.7 ± 17.1 years. The age and sex distribution of patients is presented in Table I and Figure 1.

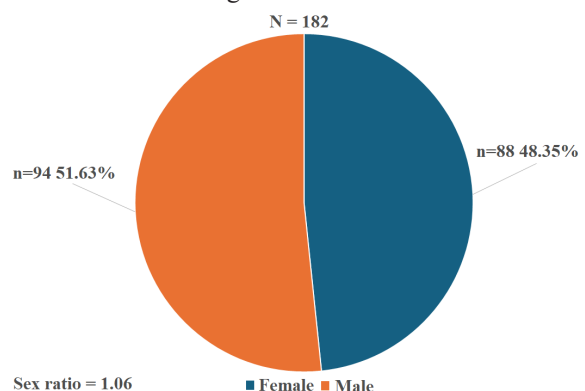


Figure 1: Distribution of patients by gender.

Distribution according to complaints presented: The main complaint during hospitalization was motor deficit 85.16% (155), followed by language disorders 58.24 % (106), facial asymmetry 31.49 and headaches. 30.22%. The main complaints are presented in Table IV.

Distribution according to medical history/cardiovascular risk factors Medical history/cardiovascular risk factors were dominated by hypertension at 51.65%, followed by tobacco at 30.22%, alcohol at 22.53% and atrial fibrillation 8.29% (Table III).

Distribution according to the diagnosis of neurological pathologies: The frequency of the different groups of neurological diseases according to the ICD-10 classification is presented in Table II. Episodic and paroxysmal disorders (epilepsy, cerebrovascular disorders, EME) were observed in 131 patients or 69.3%, followed by inflammatory diseases of the central nervous system in 13 patients or 7.3%. The most common diseases in this study were cerebral infarctions in 85 patients or 46.7%, followed by parenchymal hematoma in 46 patients or 25.3% and epilepsy in 19 patients or 11% (Table V). Distribution according to the clinical evolution of the pathology: The frequency of intra-hospital prognosis was favorable in most patients, however, we recorded a death rate of 14.8% or 27 patients (Table VI). The main causes of death were complications of recumbency: bedsores, pulmonary embolism, aspiration bronchopneumopathy.

Table 1: Distribution of patients according to age.

Age (years)	Number (N=182)	Proportion (%)
≤ 18 years old	4	2.20
19 - 45	36	19.78
46 - 60	56	30.77
>60 years old	86	47.25
TOTAL	182	100.00

Table 2: Neurological diseases according to the ICD-10 classification.

ICD-10 classification	Frequency	Percentage (%)	
Episodic and paroxysmal disorders	Cerebrovascular	131	69.3
	Epilepsy	19	11.0
	EME	3	1.7
Nerve, nerve root and plexus disorders	6	3.3	
Polyneuropathies and other disorders of the peripheral nervous system	8	4.4	
Inflammatory diseases of the central nervous system	13.0	7.3	
Systemic atrophies mainly affecting the central nervous system	2	1.1	
Other degenerative diseases of the nervous system	0	0	
Diseases of the myoneural and muscular junction	0	0	
Cerebral palsy and other paralytic syndromes	0	0	
Demyelinating diseases of the central nervous system	0	0	
Non-neurological disorders	0	0	
Total	182	100.00	

Table 3: Distribution of patients according to history and comorbidities.

History and Comorbidities	Number (N=182)	Proportion (%)
HT	94	51.65
Tobacco	55	30.22
Alcohol	41	22.53
ACFA	15	8.29
DALY	9	4.97
Diabetes	29	16.02
HIV	4	2.20
Heart failure	2	1.10

Table 4: Distribution according to reasons for patient consultation.

Reasons for consultation	Number (N=182)	Proportion (%)
Motor deficit	155	85.16
Language disorder	106	58.24
Facial asymmetry	57	31.49
Headache	55	30.22
Gait disorder	19	10.44
Convulsive seizures	25	13.74
Diplopia	23	12.71
Lower back pain	5	2.75
Fever	10	5.52
Nasal obstruction	1	0.55
Photophobia	10	5.49
Meningeal stiffness	8	4.42
Sonophobia	9	4.95
Rest tremor	6	3.30
Swallowing disorder	35	19.23
Vigilance disorder	48	26.37
Dizziness	9	4.95
Vomiting	22	12.09

Table 5: Distribution of patients according to the pathologies found.

D.C.	Number (N=182)	Proportion (%)
Cerebral infarctions	85	46.7
Parenchymal hematoma	46	25.3
Epilepsy	19	11.0
Brain abscesses	3	1.7
Spinal cord compression	6	3.3
EME	3	1.7
HIV encephalitis	5	2.8
HSA	5	2.8
HPN	2	1.1
Meningoencephalitis	3	1.7
Vacuolar myelitis	2	1.1
Neurosyphilis	1	0.6
Polyradiculoneuritis	2	1.1
Brain tumor	3	1.7
TVC	1	0.6
TOTAL	182	100.0

Table 6: Distribution of patients according to clinical course.

Evolution	Number (N=182)	Proportion (%)
Improvement	155	85.2
Death	27	14.8
TOTAL	182	100.0

Discussion

This study aimed at the global description of neurological diseases

in an African urban hospital. The present study confirms that neurological disorders are common in developing countries. Of all 215 patients, 182 or 84.7% were actually suffering from neurological pathologies confirmed by the clinic and/or paraclinic. Other African studies have shown similar results. A study carried out by Mukendi et al. [39], in the Democratic Republic of Congo, from September 2012 to January 2015, recorded a total of 351 patients suffering from neurological pathologies at the Mosango rural hospital.

Worldwide, more than one in nine people die from a neurological condition, the prevalence and impact of which is generally higher in low-income countries with an etiological pattern favoring infections of the central nervous system (CNS) [3].

Demographic characteristics of the sample

The present study included patients of all ages, with a mean age of 58 ± 17.1 years, which is similar to that found in several other studies on neurological pathologies. Particularly in the study carried out by Tegueu et al. [16], in Cameroon on the spectrum of neurological disorders presented in a neurology clinic in Yaoundé, reported a mean age of 44.83 ± 17.13 years. Our study was marked by a male predominance of 51.6% with a M/F sex ratio of 1.06. Our result is comparable to that found by Akpalu et al. [17], in Ghana, who found a male predominance of 53.4%. Furthermore, our result is different from that found by Kaddumukasa et al. [2], in a study of the prevalence and incidence of neurological disorders among adult Ugandans in the rural and urban district of Mukono found a female predominance of 67.4%.

The reasons for consultation were dominated by motor deficits in 85.16% of cases, language disorders in 58.24% of cases and facial asymmetry in 32.5%. Our results are different from those found by Tegueu et al. [16], in a study carried out in Cameroon, they reported that the main complaints at consultation were headaches (28.7%), followed by lower back (12%) and neck pain (10.8%).

Pattern of neurological pathologies: The data from our study present the same pattern of neurological diseases as those found in the majority of tropical countries. The dominant position of episodic and paroxysmal disorders (69.3%) is similar to the results of Chapp-Jumbo et al in Nigeria [18]. Early diagnosis and proper treatment can prevent death in many of these cases, such as strokes. On the other hand, many neurological diseases are chronic, such as epilepsy, and represent an enormous socioeconomic burden for patients and their families. Early and adequate treatment can prevent chronicity or secondary damage and increase mortality of patients and their families.

Among the neurological pathologies found, cerebral infarctions predominated in 46.7%, followed by intracerebral hematoma in 25.3% of cases and epilepsy in 11%. Our results are comparable to those found by Akpalu et al. in Ghana [17], who reported 5 main neurological pathologies namely: epilepsy (23%), peripheral neuropathies (19.6%), abnormal movements (14.7%), stroke (11.1%) and headaches (7.7%).

There are more than 600 diseases of the nervous system and the most common neurological conditions are epilepsy, Alzheimer's disease and other dementias, migraine, multiple sclerosis, neuroinfections, Parkinson's disease, strokes, brain tumors, traumatic brain injuries and neurological disorders linked to malnutrition [6].

The intra-hospital prognosis was favorable in most patients, however, we recorded a mortality rate of 14.8%. Our results are superimposable to those found by Mukendi et al. [19], in the Democratic Republic of Congo who reported an overall mortality rate of 8.2% (29/351) in their series. And different from those found by Laizer et al. [10], in their cohort study on "Neurological disorders in a consulting hospital in northern Tanzania" recorded an overall mortality rate for patients with neurological pathologies of 27.3% (93/337) compared to 14.5% (259/1,790) for all adult medical admissions.

Literature data suggests that in 2019, seven of the top 10 causes of death globally were noncommunicable diseases. They were responsible for 44% of all recorded deaths, and 80% of deaths caused by the 10 main causes of death.

The main limitations and difficulties encountered in the present study were the inability for some patients to perform imaging and neurophysiological examinations, which resulted in missing some diagnoses.

Conclusion

The characteristics of neurological diseases in Conakry (Guinea) are generally similar to those in the majority of tropical countries. Strokes and epilepsy are the most common diseases, while intervertebral disc disorders and degenerative diseases like Parkinson's disease are rare. An epidemiological survey in the general population and epidemiological research on risk factors are important for constructing an appropriate preventive and curative policy.

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