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Epidemiology and Clinical Characteristics of Parkinson`s Disease. A Multicentre Study in Two Referral Hospitals in Douala, Cameroon

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Abstract

Background: Parkinson's disease (PD) is the second most common neurodegenerative disease worldwide. It primarily affects the elderly population and is characterized clinically by motor and non-motor manifestations, the cardinal ones being resting tremor, rigidity, bradykinesia and postural instability

Materials and Methods: This cross-sectional retrospective included all adult patients admitted and followed up for Parkinson's disease. We reviewed the medical records for demographic characteristics and clinical features of patients with in the Neurology units of the Douala General and Laquintinie hospitals from January 2011 to December 2016.

Results: Out of the 27926 files reviewed, 170 had Parkinson disease and 166 patient files reviewed. There were 105 (63.25%) males and the mean age was 63.89 ± 10.76 years. The hospital-based frequency of PD was 0.59%. The mean duration of disease prior to consultation was 3 years. The most common presenting complaints were resting tremor (60.09%), difficult movements (9.86%) and rigidity (7.90%). The mean time interval between occurrence of first motor symptoms and diagnosis was 27.73 ± 18.54 months. The most frequent motor sign was resting tremor (35.70%), and the right upper limb initially affected 92.55% of cases. Tremor-dominant type (65.66%) was the most common motor symptom. The most frequent comorbidities found were respectively hypertension (28.92%) and diabetes (6.02%). levodopa/Carbidopa (52.99% was the he most frequently used Parkinson's disease medication.

Conclusion: Parkinson's disease affects mostly older patients, and account for a low proportion of neurology admissions. The tremor-dominant type is the most common motor form of disease at all ages. Community-based studies are needed to better describe the epidemiology of the disease in Cameroon. With the ageing population and expected increase in Parkinson disease patients, optimal planning is needed for healthcare and improving the lives of those affected.

Keywords

Parkinson's disease, Clinical profile, Douala.

INTRODUCTION

Parkinson`s Disease (PD) is the is the second most common neurodegenerative disease worldwide after Alzheimer Disease, involving about 1-2% of the elderly population above 60 years [1,2]. The burden of Parkinson disease is fast increasing globally in prevalence, disability and deaths as a result of increasing numbers of older people [3]. Parkinson`s Disease has a broad spectrum of clinical motor and non-motor manifestations, the cardinal ones being tremor at rest, rigidity, akinesia or bradykinesia and postural instability [4].

The burden of Parkinson`s Disease is likely to double worldwide by the year 2030 mainly due to an ageing of the population [3-6]. In Europe, the number of persons with PD over age 50 was between 4.1 and 4.6 million in 2005 and is expected to double to between 8.7 and 9.3 million by 2030 [5].

The prevalence of Parkinson`s Disease in industrialised countries is estimated at 0.3% in the general population and 1% in those above 60years, but studies in sub-Saharan Africa region show a lower prevalence [2,6-8]. With the demographic transition, the population is expected to become

much older in Africa, and there is need for recent epidemiologic data and description of clinical aspects of Parkinson`s Disease in the African region [9,10].

There is a scarcity of reports on the epidemiology and clinical aspects of Parkinson Disease in Cameroon. A study did in Yaoundé in 2012 revealed a prevalence of 2.9% of Parkinson Disease among patients presenting at the outpatient department for neurological consultations [11] and a retrospective review in 2001 showed that close to half of the patients with neurodegenerative diseases in the 2001 showed that about half of the patients had Parkinson`s Disease. This cross-sectional was conducted aiming to characterise the epidemiology and clinical characteristics of patients with Parkinson`s Disease in Douala, Cameroon.

METHODOLOGY

Study Setting and Design

This was a multicentre cross-sectional retrospective study of patients with Parkinson`s Disease admitted at two public hospitals; the Douala Laquintinie Hospital and the Douala General Hospital over a five-year period between January 2011 to December 2016.

The Douala Laquintinie Hospital is a secondary level referral hospital in the economic capital city of Douala. It has an Internal Medicine Department comprising a Neurology Service and other services. The Neurology service consists of an outpatient unit and an inpatient unit, where five neurologists and ten nurses and other paramedical staff work. The Douala General Hospital is a first category referral hospital with a 320 bed capacity. It has an Internal Medicine Department which comprises a Neurology Service were four neurologists work. The neurology service comprises an outpatient unit, an inpatient unit, a neurophysiology laboratory for electroencephalography and electromyography and a neurovascular intensive care unit. Both hospitals serve as teaching hospitals of the University of Douala. These hospitals receive patients from the cosmopolitan city of Douala, and referrals from other health facilities from all over the country and other countries of the central African sub region.

Data Collection

The data was collected from the medical records of patients followed up at the two referral hospitals, using a pretested standardised questionnaire. All cases were diagnosed by a neurologist practicing in the two hospitals over the study period. Details obtained included age, sex, level of education, marital status, and comorbid diseases including hypertension, diabetes, and cerebrovascular disease. We recorded clinical information on Parkinson`s Disease like the presenting symptoms, the duration of symptoms at the moment of consultation, the dominant motor symptoms, the side of the body most involved, the treatment received, and the follow up and response on treatment. Patients with incomplete medical records defined as files with no follow up data on the treatment and those with secondary Parkinsonism were excluded.

Ethical Considerations

The study was approved by the institutional ethical committee of the Douala University, and administrative authorizations obtained from both hospitals to access the medical records. This work is reported following the preferred standard in reporting observational studies in epidemiology (STROBE). No informed consent was required since it was a retrospective review of hospital medical records.

Statistical Analysis

The data collected were analysed using the SPSS software version 7.1. Data were expressed as frequency and percentages for discrete variables, and as means ± standard deviation for continuous variables. We compared proportions using the Chi-squared test or the Fischer exact test where appropriate. We considered a P-value < 0.05 to be statistically significant.

RESULTS

During the five year period, a total of 25726 patients were admitted in the neurology services of both hospitals, and 170(0.60%) were admitted for Parkinson`s Disease. There were 105(63.25%) males and 61(36.75%) females, with a sex ratio of 1.72:1. The mean age was 63.89±10.76 years. The most commonly affected age group (Figure 1) was those aged above 60 years (64.46%). About 70% of the patients were married, while 34.95% of them were retired workers. The level of literacy was 9.64%, 45.78% and 44.5% for elementary school, secondary education and higher education respectively. The duration of disease before consultation at the neurologist is shown in Table 1. The mean duration of disease prior to consultation was 36 months. The most common presenting complaints were tremor (60.09%), difficult movements (9.86%) and rigidity (7.90%). Table 2 shows the common presenting complaints.

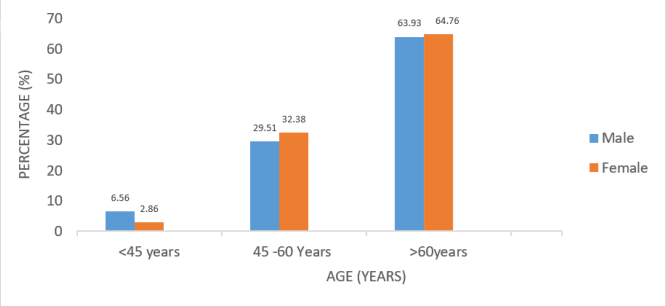


Figure 1: Age and sex distribution of patients.

Table 1: Disease Duration from onset to Neurological Consultation, in Months.

Disease Duration (Months)	Frequency (n)	Percentage (%)
<6	12	7.23
[6 – 12]	16	9.64
[12 – 24]	31	18.67
[24 – 36]	41	24.70
[36 – 48]	35	21.70
[48 – 60]	13	7.83
[60 – 72]	11	6.63
≥72	7	4.22
Total	**166**	**100.00**

Table 2: Distribution of Parkinson`s Disease patients with respect Presenting Complaints.

Presenting Complaints	Frequency	Percentage (%)
Tremors	128	60.09
Bradykinesia	21	9.86
Rigidity	17	7.98
Postural Instability	13	6.10
Pain	10	4.69
Cognitive disorders	10	4.69
Speech Disorders	7	3.29
Sleep Disorders	4	1.88
Hallucinations	3	1.41
Total	**213**	**100.00**

Motor symptoms of Parkinson Disease at presentation are shown in Table 3. The predominant motor sign at presentation was resting tremor.

Table 3: Motor Symptoms of Parkinson`s Disease at Presentation.

Motor symptom	Frequency	Percentage (%)
Resting Tremor	146	35.70
Rigidity	133	32.52
Bradykinesia	130	31.78
Total	**409**	**100.00**

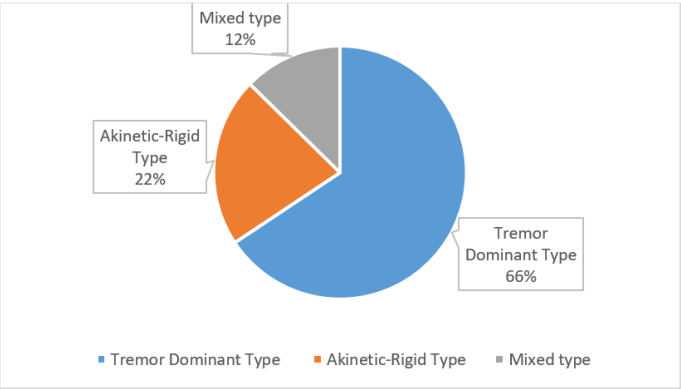


Figure 2: Classification of Parkinson's disease based on Motor Subtypes.

The clinical subtypes of Parkinson`s Disease in the patients are shown in figure 2.

The Tremor - dominant type was the most common motor form of Parkinson`s Disease irrespective of the age group (Figure 3).

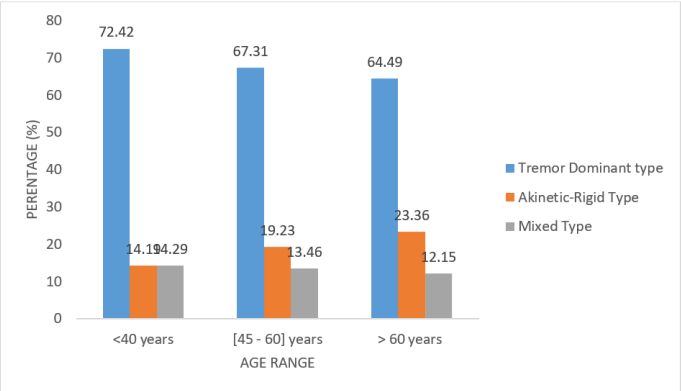


Figure 3: Distribution of Motor Subtypes of Parkinson`s Disease by Age Group.

There was no statistical difference between the clinical subtypes; tremor-dominant, akinetic-rigid, or mixed type and gender. Hypertension and diabetes were the most common comorbidities in 28.92% and 6.02% of the patients respectively.

Regarding the use of Antiparkinsonian drugs, levodopa, dopaminergic agonists, and anticholinergic drugs were the most common prescribed drugs at 52.99%, 27.78% and 19.78% respectively. The most common drug combinations used are shown in table 4.

Clinical improvement in Parkinson`s Disease patients was best obtained with the Levodopa/Carbidopa plus Dopaminergic Agonist drug combinations as shown on table 5. A total of 122 patients show clinical improvement on follow up.

Table 4: Distribution of Antiparkinsonian drug combinations used in the patients.

Antiparkinsonian Treatment	Frequency	Percentage (%)
Levodopa/carbidopa (LD/CD)	61	36.75
Dopamine Agonists + LD/CD	42	25.30
Anticholinergic Drugs	21	12.65
Anticholinergic + LD/CD	19	11.45
Dopamine Agonists	18	10.84
Dopamine Agonists + Anticholinergics	3	1.81
Dopamine Agonists + Anticholinergics + LD/CD	2	1.20
Total	**166**	**100.00**

Table 5: Distribution of Antiparkinsonian Drug Combination type by Clinical Improvement.

		Clinical Improvement		P Value
Antiparkinsonian Treatment	**Total**	**No**	**Yes**	
Anticholinergic Drugs				
No	121	**24(19.83)**	**97 (80.17**	**0.0026**
Yes	45	**20(44.44)**	**25 (55.56)**	
Dopamine Agonists				
No	101	**33(32.67)**	**68 (67.33)**	**0.0305**
Yes	65	**11(16.92)**	**54 (83.08)**	
Levodopa/carbidopa (LD/CD)				
No	42	**15(35.71)**	**27 (64.29)**	**0.1560**
Yes	124	**29(23.39)**	**95 (76.61)**	
Dopamine Agonists + LD/CD				
No	124	**39(31.45)**	**85 (68.55)**	**0.0145**
Yes	42	**5(11.9)**	**37 (88.10)**	

DISCUSSION

The aim of the present study was to characterise the epidemiology and clinical profile of Parkinson`s Disease as seen in two referral hospitals in Douala, Cameroon. Parkinson`s Disease accounted for 0.6% of neurological admissions in the two hospitals over the five years period. This prevalence is different from the 1.47% and 2.9% reported by Okubadejo et al in Lagos, Nigeria in 2010 [12] and Kuate et al. in Yaoundé in 2012 [11], respectively. This difference in prevalence is because their studies report findings from the outpatient department while this is an inpatient hospital – based study, and the methodologies differ. Community studies are therefore needed to provide further insights into epidemiology and associated factors of Parkinson Disease in the city of Douala.

The mean age of the patients was 63.89±10.76 years in the present study, which is similar to what Cubo at al. reported on comparison of patients between Spanish and Cameroonian cohorts in the same settings [13]. The highest rate of Parkinson`s Disease was among the patients in the age range above 60years (Figure 1). In a study conducted by Dotchin et al. at Hai in Tanzania in 2008, the mean age of the participants was 69 years, which was higher than that of the subjects in the present study [14]. The mean age at onset of Parkinson`s Disease in most patients in sub-Saharan Africa has been

shown to be above 50 years [6,10].

Most of the studies reported worldwide show a predominance of male patients [12,14-16]. The male to female ratio in our patients was 1.72:1. In 2010, El Tallawy et al. in Egypt and Okuloadejo et al. in Lagos Nigeria [12,15] also found a male predominance among Parkinson disease patients. These findings are contrary to the findings reported by Grunitzky et al. in Togo who found a predominance of female patients.

The patients with Parkinson`s Disease were mostly retired workers of the tertiary sector (34.9%), while of those still in active service were farmers (21.69%). This is because it was a hospital –based study in the city of Douala where activities are mostly of the tertiary sector. Community studies carried out in rural areas of sub-Saharan Africa showed that Parkinson`s Disease is common among farmers [15,17,18]. A meta-analysis of Parkinson's Disease and exposure to pesticides by Priyadarshi et al. [19] had shown that farmers` exposure to pesticides may be a significant risk factor for developing PD.

Our series shows that patients with Parkinson Disease present late for initial consultation, with duration of initial symptoms ranging from 6 to 72 months (Table 1). The mean duration before consultation by at the hospital was 36 months. Femi et al. in Kano [16], Okubadejo et al. in Lagos and Akinyemi RO [20] have reported a similar pattern in Nigeria with a duration of symptoms prior to consultation ranging between 3 months and 16 years.The late presentation is occasioned by the poor public awareness and wrong cultural perceptions of disease, attributing symptoms of Parkinson Disease as a normal part of ageing.

The clinical profile of patients was similar to that in other populations, with the most common presenting complaints being resting tremor, difficulties of movement and rigidity as shown on table 2. The predominant motor subtype was tremor dominant Parkinson Disease (Figure 2), irrespective of the age group as shown in figure 3. This clinical presentation is similar to that observed in most parts of Africa [12,15,17], and even in other countries as in China [21]. Oparah et al. [22] in Calabar, Nigeria describe a very high rate of tremor dominant Parkinson disease in up to 97.6% of 42 patients examined at the outpatient, contrary to the findings of Okubadejo et al who reports the mixed form as the most predominant form of Parkinson disease [12]. We did not do a staging of our patients as the study was a review of clinical records. However, Cubo et al. [13] on comparing the clinical profile of Parkinson's disease between Spanish and Cameroonian Cohorts from one of the study settings showed that Cameroonians patients had more severely impaired motor signs due late presentation. Tremor –dominant Parkinson`s disease presents initially with tremor associated with mild Bradykinesia and rigidity, and the patients progress slowly over many years with tremor remaining the most predominant clinical symptom [23].

Hypertension and diabetes were common cardiovascular comorbidities in Parkinson`s disease patients at rates of 28.92% and 6.02% respectively. Hypertension has been reported as the most incident cardiovascular risk factor among Parkinson`s disease patients [24]. Cameroon`s prevalence of hypertension is high and occurs frequently in the urban cities [25], thus this comorbidity could be explained by the context.

Parkinson`s disease medications commonly used in the patients were levodopa/carbidopa, dopamine receptor agonists, and anticholinergic drugs. The various drug combinations commonly prescribed are shown on table 4. Levodopa/carbidopa was the prescribed medication in 36.75% of our patients. Cubo et al. [13] in 2013 reported up to 77% of Cameroonian patients taking levodopa intermittently, and patients were more frequently on anticholinergic drugs. Parkinson disease medications access is limited in most African countries, and the newer medications are usually not available. However, clinical improvement was obtained in up to 88.10% of the patients on levodopa/carbidopa and dopamine agonist combinations. This are similar to the results obtained by Okubadejo et al in Lagos, Nigeria [17].

This study has several limitations because of its retrospective nature as the review of medical records could not characterise all the clinical symptoms of Parkinson`s disease in the population. This hospital –based study cannot adequately characterise the epidemiology of Parkinson`s disease in Douala. Our study did not consider the non-motor symptoms of Parkinson disease; however, this study provides useful information on the clinical profile of Parkinson`s Disease in the hospital setting. Further studies would be beneficial in improving our knowledge of Parkinson`s disease in our setting.

CONCLUSION

This study is the first to describe the epidemiology and clinical profile of Parkinson disease in the hospital setting in Cameroon. Parkinson`s Disease accounts for a low proportion of neurological admissions in the hospitals in Douala. It mainly affects older people, and the tremor-dominant type is the most common form of disease at all ages. Available drugs control most of the motor symptoms, and there is limited availability of the newer Parkinson disease medications. With the ageing population and expected increase in Parkinson disease patients, optimal planning is needed for healthcare and improving the lives of those affected by the condition.

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