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Original Research

The Pattern of Neurological Conditions in a Tertiary Institution in Nigeria: Six Years Experience in Ekiti State, Nigeria

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Abstract

Background: Neurological disorders constitute major causes of morbidity, and globally, they are the leading causes of death. There is a dearth of neurologists in most African countries and the very few available ones are concentrated in urban areas. The cardiovascular and communicable risk factors responsible for most cases of acute and chronic neurological disorders are also prevalent in rural areas. Although patients from the neighbouring states attend the study centre, the majority are indigent. Therefore, there is a need to observe the pattern of these disorders in Ekiti, to appreciate the disease burden as it would help in the judicious allocation of human and other healthcare resources.

Methodology: We reviewed the case files of patients seen at the neurology clinic and admitted via the emergency department into the Federal Teaching Hospital, Ido-Ekiti, over a period of 6 years (2016 to 2021).

Results: A total of 881patients were seen during the study period, and they were mostly elderly male patients with chronic disorders in which stroke was the most common neurological disorder (44.9%) followed by seizure disorder (13.1%), and neurodegenerative disorders (9.9%). Tumors and myopathies were the least seen disorders.

Conclusion: Health literacy on cardiovascular risk factors and even the distribution of manpower and material resources will help reduce the burden of neurological disorders among the attendees of the Ekiti tertiary health institution.

Keywords: Neurological disorders, Ekiti, Nigeria

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Quick Response Code:

Introduction

Neurological disorders constitute major causes of morbidity, and globally, they are the leading causes of death.[3] They are either primary disorders of the nervous system or neurological manifestations of other systemic diseases.[3] Most neurological disorders are viewed as spiritual attacks, therefore, patients and their relations prefer to visit spiritual homes for remedy.[4] This is further compounded by low educational levels, poverty, and inefficient hospital treatment due to the dearth of neurologists in most African countries.[6] In Nigeria, for instance, the few available neurologists are concentrated in urban centers of the country where the adoption of Western lifestyles is believed to contribute more to the increasing incidence of neurovascular and cardiovascular events such as stroke and other cardiovascular diseases.[4] This is no longer the case as there is an increasing level of socialization and urbanization in rural areas as well, predisposing them to cardiovascular risk factors.[1] There is a need to observe the pattern of these disorders in Ekiti, to appreciate the disease burden as it would help in judicious allocation of human and other health care resources.

Methodology

The admission books and case files of patients seen at the emergency department, neurology clinic, and the medical wards of the Federal Teaching Hospital, Ido-Ekiti, Nigeria were retrieved for the extraction of information used for this study. The hospital is a referral centre for the general and specialist hospitals in Ekiti State and neighbouring states: Ondo, Kogi, and Kwara. Records were taken from January 2015 to December 2020. Two reviewers ensured that there was no duplication of records, especially for those patients that were admitted via the emergency department and the neurology clinic to the medical wards. Diagnoses were made by the hospital neurologist and confirmed by the available diagnostic equipment such as MRI, CT machine, EEG machine, and well-equipped medical laboratories. Patients were referred for nerve conduction studies. Cases of stroke were confirmed with brain CT/MRI within a week of admission and for those who were not stable enough to be transferred for neuroimaging, the updated definition of stroke for the 21st century, according to the American Heart Association and American Stroke Association was used.[7] Diagnosis and classification of seizures were based on ictal semiology and EEG. We used the UK Parkinson's Disease Study Brain Bank criteria for the diagnosis of Parkinson's disease while other movement disorders were diagnosed clinically based on the pattern. Neuropsychiatric disorders were diagnosed using the ICD-10 criteria[6] in addition to neuroimaging and other biochemical investigations to rule out organic brain disorders. Cord compression syndromes were confirmed with X-ray and MRI.

Results

A total of 881 patients were seen during the study period with males constituting 51.2 percent. Most of the patients were predominantly (69.8%) seen in the clinic with a median age of 58.23 ± 18.33 years.

Table 1: Age and sex distribution of the patients

Variable	Frequency	Percent
Age (years)		
18 - 44	210	23.8
45 - 64	333	37.8
≥ 65	338	38.4
Mean ± SD	58.23 ± 18.33	
Range	18 – 105	
Sex		
Male	451	51.2
Female	430	48.8
Place		
Clinic	615	69.8
Ward/Emergency	266	30.2

The Years 2016 and 2017 recorded the highest number of patients (27.5 and 26.1% respectively) with a progressive decline to 2020. There were few confirmed neurological cases seen and admitted in 2015 (1.4%). The Year 2020 also recorded a low patient turnout (2.8%).

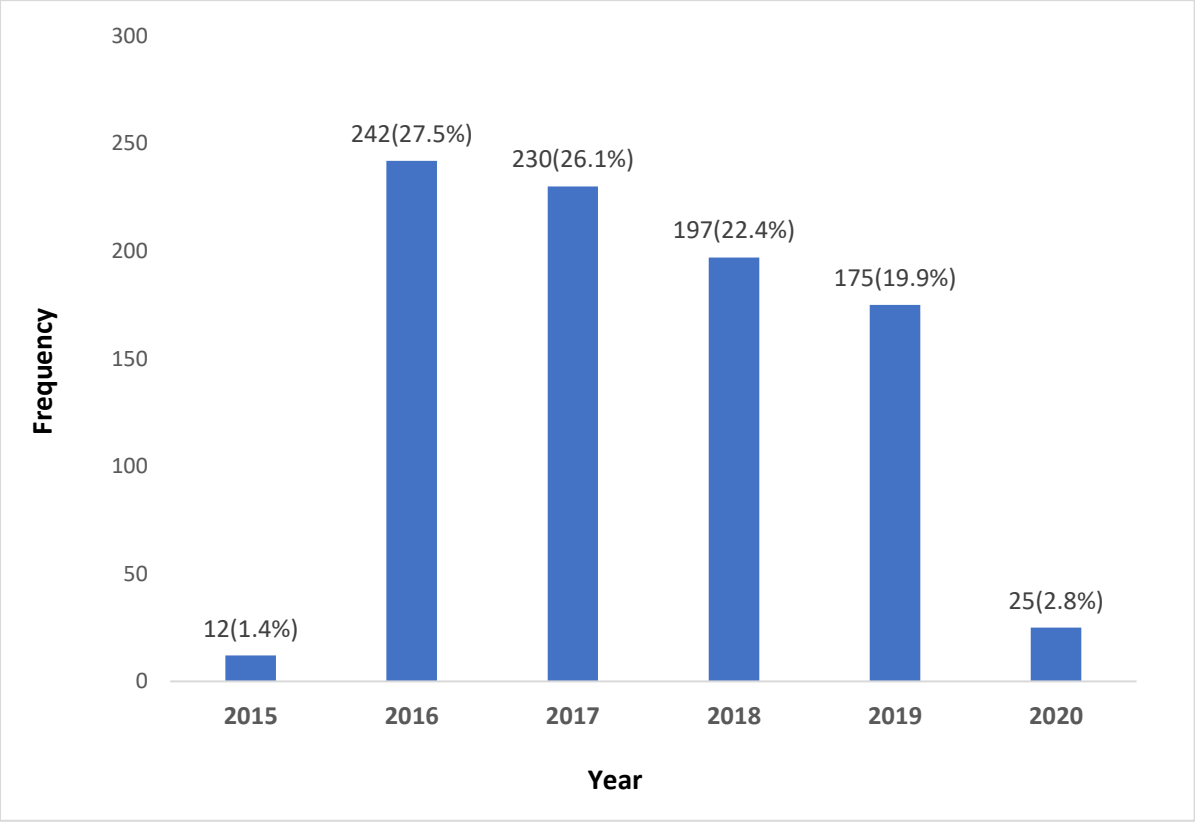

Figure 1: Distribution of the patients based on the year

Vascular events (ischemic and hemorrhagic strokes) constituted the highest proportion (44.9%) of neurological disorders seen over the 6-year period. This was followed by seizures and movement disorders, 13.1% and 9.9% respectively. Myopathies (1.0%) and tumors (0.5%) were the least seen. (Figure 2).

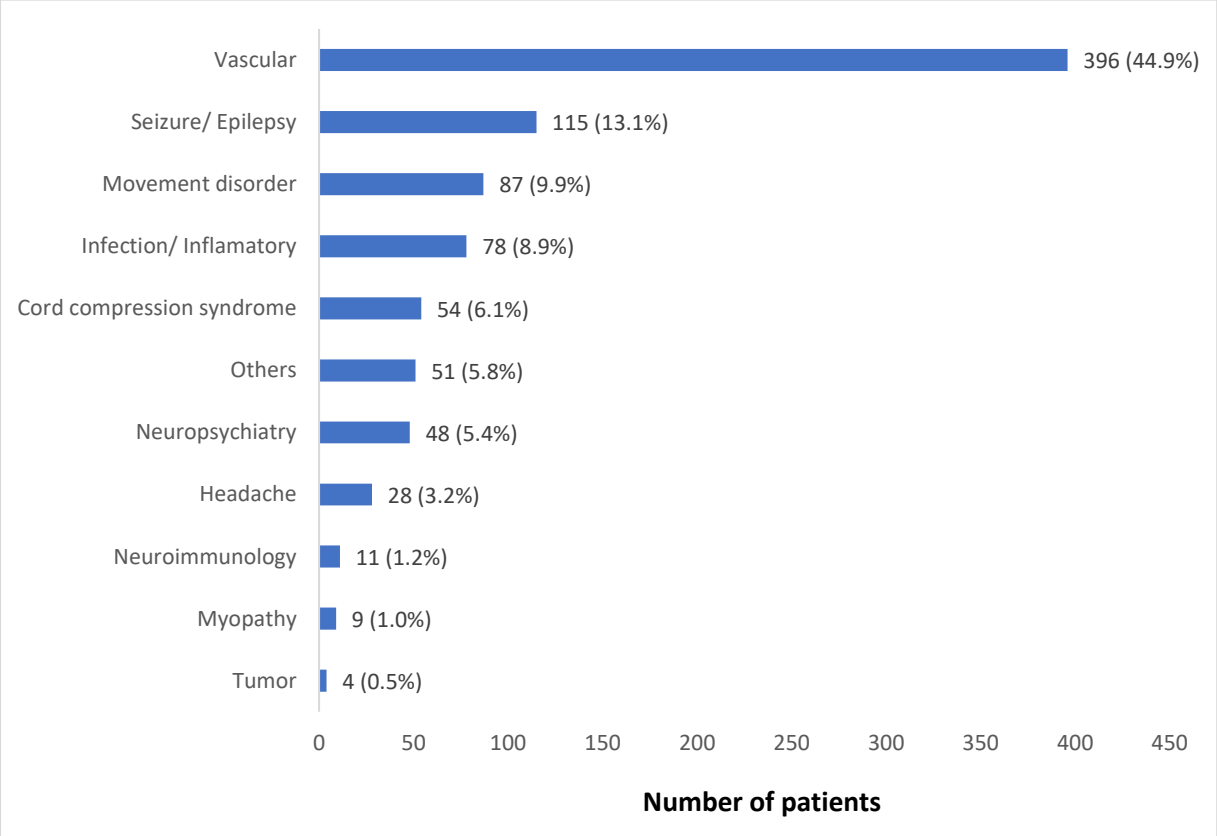

Figure 2: Neurology cases seen from 2015 to 2020

Cases of stroke were commoner in females (50.5% of all cases recorded) and in those above the age of 65 years (59.8% of all cases seen). The highest proportion of seizure disorders was recorded in the youngest age group (18 to 45 years) and commoner in males (13.3% of total cases). Movement disorders were most common (13.3%) among the elderly and commoner in males (14.2% of total cases). The diagnoses and patterns according to age group and sex distribution are shown in Table 2 and Figures 3 and 4 respectively.

Table 2: Diagnosis based on age and sex distribution of the patients

Diagnosis	Age (years) 18 – 44 n=210(%)	45 – 64 n=333(%)	≥ 65 n=338(%)	Sex Male n=451(%)	Female n=430(%)	Total N=881(%)
Vascular	36(17.1)	158(47.4)	202(59.8)	179(39.7)	217(50.5)	396(44.9)
Infection/inflammatory	28(13.3)	31(9.3)	19(5.6)	42(9.3)	36(8.4)	78(8.9)
Seizure/ Epilepsy	63(30.0)	27(8.1)	25(7.4)	61(13.5)	54(12.6)	115(13.1)
Movement disorder	12(5.7)	29(8.7)	46(13.6)	64(14.2)	23(5.3)	87(9.9)
Neuropsychiatry	7(3.3)	16(4.8)	25(7.4)	19(4.2)	29(6.7)	48(5.4)
Neuroimmunology	5(2.4)	5(1.5)	1(0.3)	8(1.8)	3(0.7)	11(1.2)
Headache	17(8.1)	10(3.0)	1(0.3)	10(2.2)	18(4.2)	28(3.2)
Others	17(8.1)	25(7.5)	9(2.7)	26(5.8)	25(5.8)	51(5.8)
Cord compression syndrome	17(8.1)	28(8.4)	9(2.7)	35(7.8)	19(4.4)	54(6.1)
Tumor	2(1.0)	2(0.6)	0(0.0)	2(0.4)	2(0.5)	4(0.5)
Myopathy	6(2.9)	2(0.6)	1(0.3)	5(1.1)	4(0.9)	9(1.0)

All the neurological cases recorded the highest hospital presentation between 2016 and 2017 with a steady decline from 2018 except for cord compression syndrome which peaked that year (11.7%) of cases. In the following year, there was a sharp drop in cases of cord compression syndrome to 3.4%. The diagnoses of the other neurological disorders per year are shown in Table 3.

Table 3: Diagnosis per year

Diagnosis	Year 2015 n (%)	2016 n (%)	2017 n (%)	2018 n (%)	2019 n (%)	2020 n (%)	Total N (%)
Vascular	9(75.0)	101(41.7)	98(42.6)	86(43.7)	81(46.3)	21(84.0)	396(44.9)
Infection/inflammatory	2(16.7)	20(8.3)	19(8.3)	12(6.1)	24(13.7)	1(4.0)	78(8.9)
Seizure/ Epilepsy	0(0.0)	33(13.6)	36(15.7)	27(13.7)	16(9.1)	3(12.0)	115(13.1)
Movement disorder	0(0.0)	24(9.9)	26(11.3)	24(12.2)	13(7.4)	0(0.0)	87(9.9)
Neuropsychiatry	0(0.0)	18(7.4)	13(5.7)	3(1.5)	14(8.0)	0(0.0)	48(5.4)
Neuroimmunology	0(0.0)	2(0.8)	4(1.7)	1(0.5)	4(2.3)	0(0.0)	11(1.2)
Headache	0(0.0)	8(3.3)	9(3.9)	4(2.0)	7(4.0)	0(0.0)	28(3.2)
Others	1(8.3)	22(9.1)	8(3.5)	11(5.6)	9(5.1)	0(0.0)	51(5.8)
Cord compression syndrome	0(0.0)	10(4.1)	15(6.5)	23(11.7)	6(3.4)	0(0.0)	54(6.1)
Tumor	0(0.0)	0(0.0)	1(0.4)	3(1.5)	0(0.0)	0(0.0)	4(0.5)
Myopathy	0(0.0)	4(1.72)	1(0.4)	3(1.5)	1(0.6)	0(0.0)	9(1.0)
Total	***12(100.0)***	***242(100.0)***	***230(100.0)***	***197(100.0)***	***175(100.0)***	***25(100.0)***	***881(100.0)***

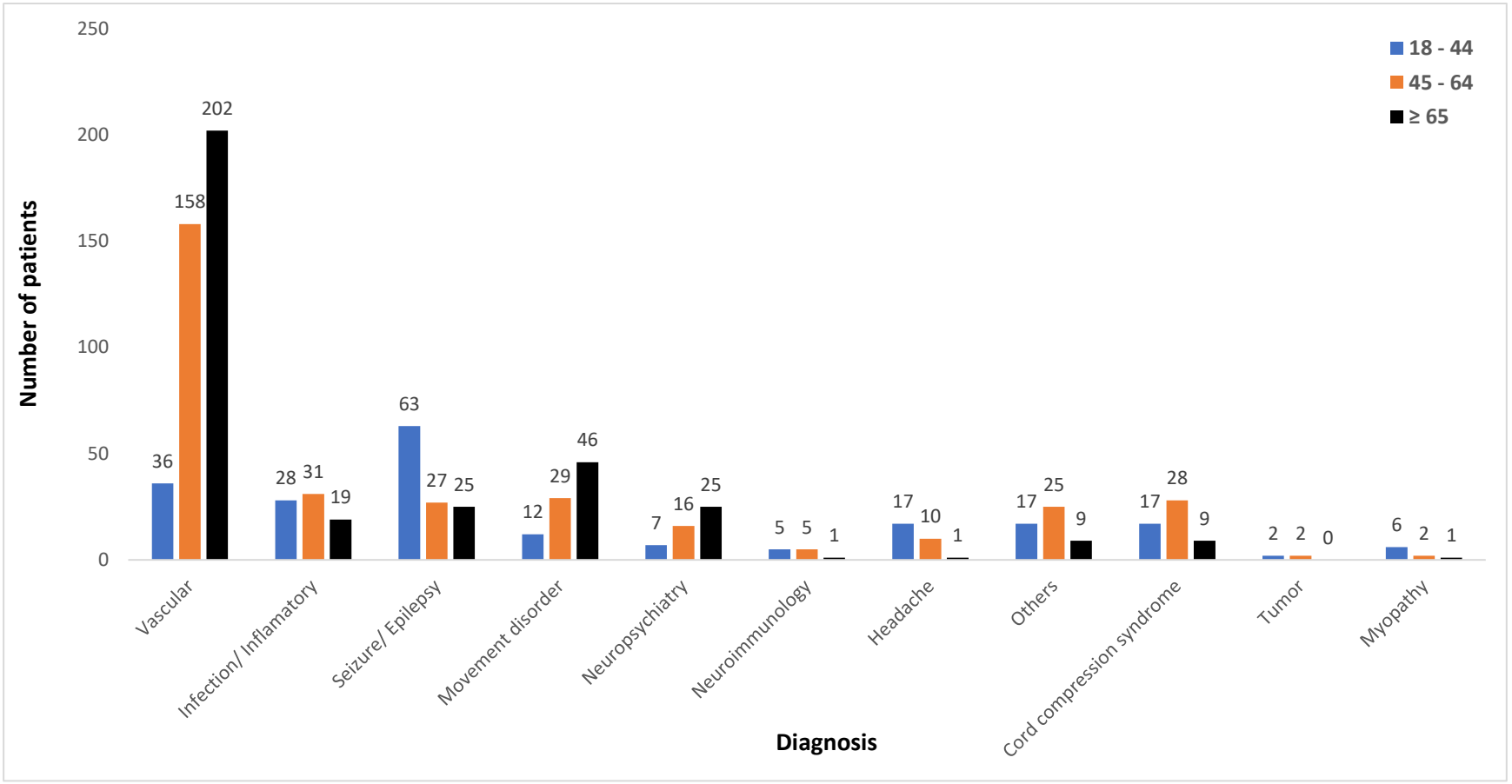

Figure 3: Pattern of diagnosis based on the age distribution of the patients

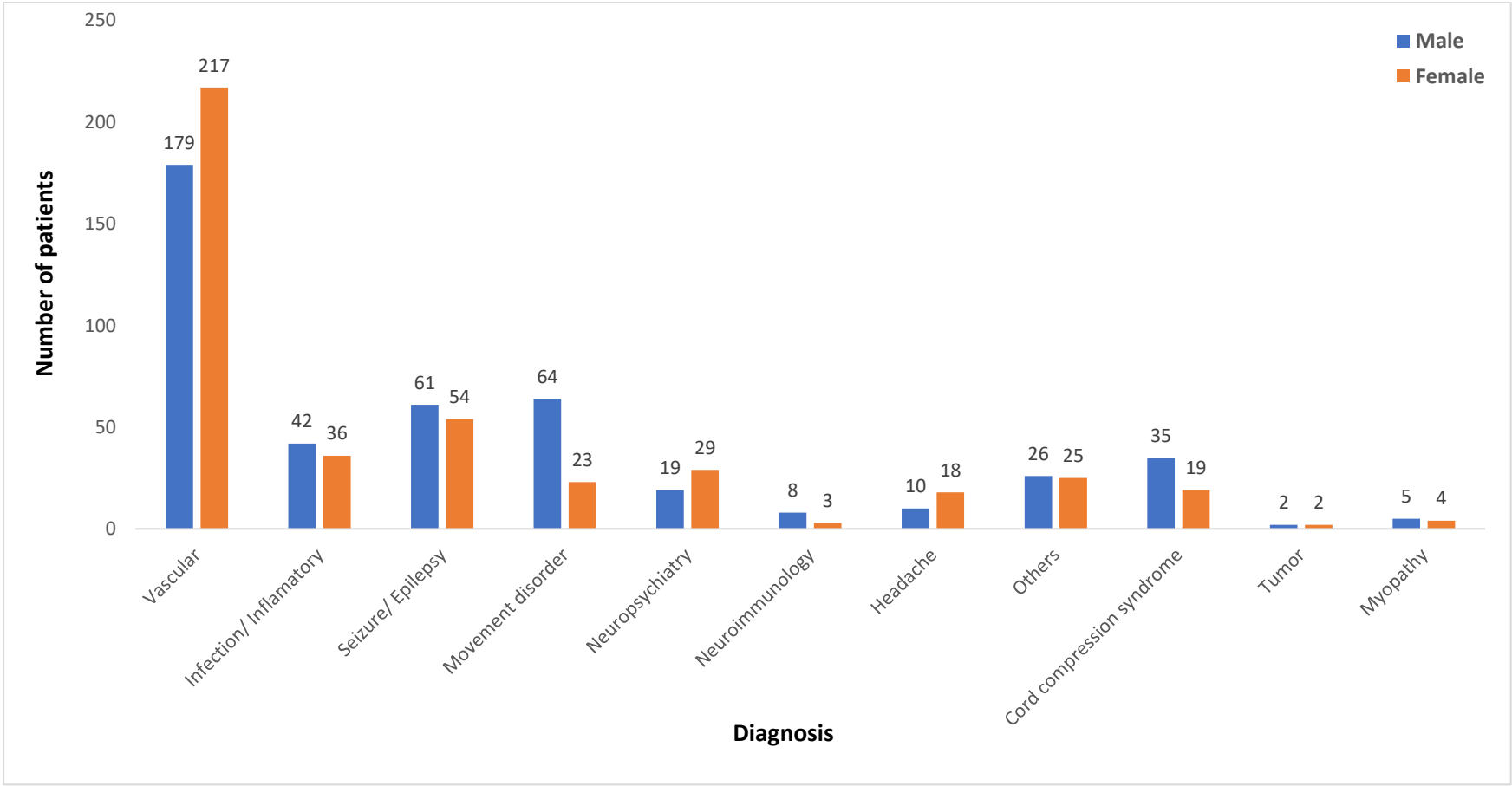

Figure 4: Pattern of diagnosis based on sex distribution of the patients

Discussion:

They were mostly elderly male patients with chronic disorders similar to the findings at a southeastern teaching hospital by Ekenze et al.[4]There was a sharp increase in the number of cases seen in 2016 as a result of the participation of the institution in research on stroke (Stroke Investigative Research and Education Network, SIREN).[2] As part of the recruitment process, patients were educated on the risk factors for stroke and both the primary and secondary preventive measures. Those with identified risk factors were referred to the hospital immediately for urgent clinical interventions. This might have contributed to the progressive steady decline in the new cases of stroke recorded per year. This emphasizes the role of patient education in health promotion. In the year 2020 where there was a significant drop in admission due to the COVID-19 pandemic. There was total lockdown across the country and only a few patients with emergencies, mainly stroke and seizures, presented to the hospital for admission.

The acute cases were more of stroke, highest in the year 2016 because of increased advocacy on the awareness of symptoms and timely hospital presentation as part of SIREN protocol. The survivors were followed up in the subsequent years with an emphasis on secondary and tertiary stroke prevention strategies.

Stroke had the highest prevalence similar to the findings of Talabi et al[2] in Ibadan and also the experience of Owolabi et al,[3] and Ibrahim et al[2] both in Kano, Nigeria. It was commoner in females, and in those above the age of 65 years as it was found by Desalu et al,[2] six years before this study, in the same geographical area. Ogun et al,[6] in another southwestern tertiary institution in Nigeria, found a similar female preponderance. The reason for the slight female preponderance in this study, as opposed to other studies,[2, 3] is the longer female life span to the age that stroke is most prevalent. Seizure disorders were recorded as the second most prevalent disease in this study similar to findings in some other countries where it is predominant in the young age group, and commoner in males as reported in most African countries.[1] However, a similar study at Ile-Ife, Nigeria, by Komolafe et al[11] found epilepsy as the most common neurological disorder, followed by stroke. This, probably, must have been because their cohorts were outpatients only. Movement disorders ranked third on the list and were most common among elderly men. The commonest seen in our cohort is Parkinson's disease which is a neurodegenerative disease with a peak incidence of 70-79 years.[6] The order of prevalence observed in this study is the same as that of the neurology clinic of the KomfoAnokye Teaching Hospital in Kumasi, Ghana. The exponential rise in the incidence of cardiovascular risk factors such as diabetes mellitus, obesity, and sedentary lifestyle, hypertension, dyslipidemia in many African countries explains why there are escalating rates of stroke and ischemic heart diseases.[3, 10] It is quite clear why stroke is the most common neurologic disorder in our cohort.

Stroke, movement disorders, and neurodegenerative conditions were seen more in the elderly while seizure/epilepsy was the only disorder most prevalent among young individuals. This observation implies that there is ample time to prevent the development of these disorders. This calls for actions to reduce the burden of stroke by emphasizing primordial and primary prevention of stroke.[1, 10154] Alzheimer's disease and vascular dementia can also be prevented by adequate and timely control of cardiovascular risk factors.[4] Neuroinfectious conditions (including NeuroAIDs, meningitis, tetanus, and transverse myelitis), and cord compression syndromes, (surprisingly cervical spondylosis) were commoner among the young patients. Presentations were neck pain radiating to the forearms and paresthesia in the hands. There were two cases of lumbar spondylosis that presented with priapism which were subsequently referred to the neurosurgeon for laminectomies. Cord compression cases at the neurology clinic dropped as the hospital got a neurosurgeon in year 2018. Most of the neurological conditions in this cohort were more in males, except for stroke, neuropsychiatric disorders, and headaches.[4] Most of our stroke patients are postmenopausal as stroke rates increase among postmenopausal women compared with age-matched men.[12]

Conclusions:

Our experience in Ekiti, Nigeria, shows that stroke is the most common neurological disorder followed by seizures and movement disorders. The observed progressive decline in the cases of stroke may be attributable to health education and timely intervention on detected cardiovascular risk factors which if intensified can also reduce the incidence of Alzheimer's disease and vascular dementia.

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