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Spectrum of neurological disorders presenting at a neurology clinic in tertiary care hospital in peshawar, pakistan

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SPECTRUM OF NEUROLOGICAL DISORDERS PRESENTING AT A NEUROLOGY CLINIC IN TERTIARY CARE HOSPITAL IN PESHAWAR, PAKISTAN

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ABSTRACT

Objective: To ascertain the spectrum of different neurological disorders presenting at a tertiary care neurology clinic in Peshawar, Pakistan. **Method:** A prospective observational study was conducted of all presentations to the neurology clinic in Northwest General Hospital and Research Center, over a period of one year extending from 1st February, 2013 to 31st January, 2014. Study population included 9386 patients from the neurology clinic over the period of one year. The age distribution of all patients was variable; the youngest patient seen was 1 year old while the oldest was 92 years of age. Appropriate history and neurological examination was conducted by consultant neurologist and classified patients into neurological diseases according to the International Classification of Disease (ICD-10) codes for neurology. Statistical analyses were carried out using the software SPSS version 11 and qualitative variables were presented as percentages. **Results:** A total of 9386 patients were examined and classified into different neurological disorders according to the International Classification of Disease (ICD-10) codes for neurology. Headache was the most common presentation (24%), followed by Cerebrovascular diseases (22%) and Epilepsies (17%). **Conclusion:** Headache was the most commonclinical presentation for neurology consultation followed by Cerebrovascular accidents (CVA) and epilepsy respectively. Almost all the categories of neurological disorders i.e. Inflammatory, Infective, Neoplastic and Degenerative Diseases were seen in the outpatient neurology clinic.

INTRODUCTION

Neurological disorders are responsible for more than 20% of the world's burden of disease while neurological and psychiatric disorders are responsible for up to 28% of all years of life lived with disability.[1] The burden of these neurological diseases is higher in developing countries that constitute about 85% of the world's population.[1, 2] It ranges from 4-5% in lower income countries as compared to 10-11% in high income countries.[3] The over all death and disability related to Neurological diseases is higher than HIV/AIDS, neoplasm's, ischemic heart diseases and tuberculosis. More than half of the disability due to neurological diseases is related to stroke followed by dementia, migraine, epilepsy and tetanus.[3] Approximately 5 million people suffer from neurological diseases in Pakistan. 250 people out of every 100,000 people suffer from stroke and paralysis, while 350,000 new cases are being reported annually.[4] A recent community-based survey suggested an estimated 21.8% prevalence of strokeand/or TIA in an urban slum of Karachi.[5] More than 2 million people are suffering from epilepsy and a large number are suffering from other neurological diseases like Parkinson's disease.[6] Although incidence of ischemic stroke and intracerebral hemorrhage is not known but due to high prevalence of cerebro vascular risk factors we can assume, that it is not less than any western country.[6] Prevalence of epilepsy in a community based study in Karachi was 9.8 per 1000 population.[7] There is a paucity of data on the burden of neurological diseases in Pakistan. Hospital derived data may be under-representative of the true prevalence of diseases in developing countries but they often serve as a window to the true situation. This is a report on the profile of neurological diseases as seen at Neurology clinic in Peshawar, Pakistan.

METHODS

A prospective observational study was conducted of all presentations to neurology clinic in Northwest General Hospital and Research Center over a period of 1 year extending from 1st February, 2013 to 31st January, 2014. A Study population included 9386 patients from the neurology clinic over the period of one year. Appropriate history and neurological examination was conducted by consultant neurologist and classified patients into neurological diseases according to the International Classification of Disease (ICD-10) codes for neurology and divided into twelve sub groups. (1) Primary

Headache Disorder, (2) Cerebrovascular Accidents, (3) Epilepsy, (4) Lumbosacral Disc Herniation, (5) Psychiatric Disorders, (6) Neuropathy and Muscular Disorders, (7) Movement Disorders, (8) Dementia and Cognitive Impairment, (9) CNS Infections, (10) Neoplastic Disorders, (11) Spinal Cord Disorder, (12) Miscellaneous. Statistical analyses were done using the software SPSS version 11 and qualitative variables are presented as percentages.

RESULTS

The total number of population was divided into 12 major groups which were further divided intovarioussub groups. Out of total population, 55% patients were males and 45% were females with male to female ratio of 1.2: 1 and the mean age was 46 years. Out of the total 9386 population study, Headache 24% (n=2227) was the largest group, followed by Cerebrovascular Accidents, which constituted 22% (n= 2053) and Epilepsy being 17% (n=1608). These were followed byLumbosacral Pain (low backache) 8% (n=770), Psychiatric Disorders 8% (n=754), Miscellaneous Disorders 7% (n=674), Neuropathies 4% (n=393), Dementia 2% (n=158), CNS Infections 2% (n=150), Space Occupying Lesions 1% (n=85) and Spinal Cord Syndromes 0.26% (n=27) respectively. (Figure1).

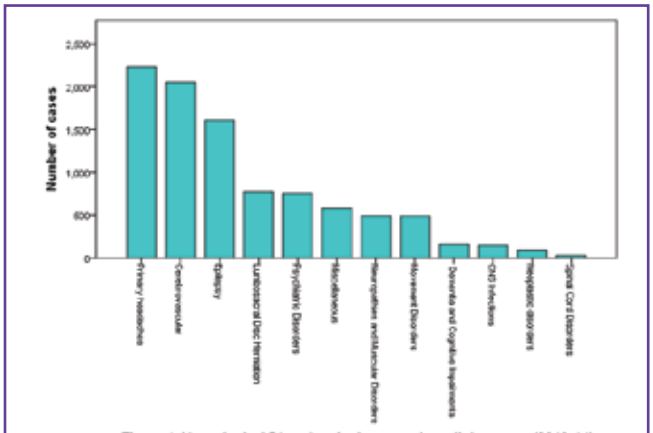

Figure 1. Neurological Disorders in the outpatient clinic survey (2013-14).

The major categories of headache were Tension Type Headache and Migraine, consisted of 48.5% (n=1080) and 48.1% (n=1071) respectively. Epilepsies were further subdivided into Generalized Epilepsy 90% (n=1447), NonEpilepticattacks 9% (n=144), Focaland Febrile Seizures 1% (n=16) respectively. The Psychiatric Disorders were 8% (n=754) of the total cases. Conversion Disorders (n=280) and Psychosis (n= 213) were the common presentation in our study. The other presentations were Generalized Anxietydisorders (n=195), Behavioral Issues (n=40), Obsessive Compulsive Neurosis (n=13), Attention Deficit Hyperactive Disorder (n=5), Road Rage (n=3), Post-partum Psychosis (n=3)and Post Traumatic Psychosis (n=2). The Miscellaneous group (Table-1) consisted of different neurological disorders put together in a single group,which constituted 2% of the total population in the study. The most common presentation were Mental Retardation (n=151), Metabolic Disorders (n=131), Sleep Disorders (n=51), Cerebellar Ataxia (n=51), Arthritis (n=33), Undiagnosed Cases (n=37), Radiculopathies including Cervical and Lumbar (n=30), Cerebral Palsy(n=27), Myasthenia Gravis (n=25), Demyelinating Disorders (n=16) of which, Multiple Sclerosis (n=9) and Neuromyelitis Optica (n=7) and Motor Neuron Disease (n=12) respectively. Among the peripheral and cranial neuropathies group which constituted 4% (n=393) of the total study cases (Table-2). Among the cranial neuropathies, Bell's palsy(n=262) was the most common presentation followed by Optic Neuritis (n=2), Third Nerve Palsy (n=7) and Sixth Nerve Palsy (n=11) respectively. Peripheral neuropathies and mononeuropathy mainly constituted of chronic mixed Sensorimotor Axonal Polyneuropathies (n=78), Guillain-Barre Syndrome (n=9), Motor Neuropathies (n= 9), Sensory Neuropathies (n=4), Chronic Inflammatory Demyelinating Polyneuropathies (n=3), Carpel Tunnel Syndromes (n=6) and Mononeuritis Multiplex (n=2). Dementia and cognitive disorders were grouped together consisted of 2% (n=158) of the total cases, Dementias (n=131) and Cognitive Impairment (n=27) respectively. Among the movement Disorders (n=489), Idiopathic Parkinson's disease71% (n=351) was the most common presentation, followed by dystonia's 16% (n=78). Drug Induced Parkinsonism (n=17), Essential Tremors (n=16), Chorea (n=11), Parkinson's Plus Syndrome (n=11) and Wilson's disease (n=5) were the other movement disorders observed in our study. Among the CNS Infections (n=150); Pyogenic Meningitis 34% (n=51), Tuberculous Meningitis 30% (n=46), Viral Encephalitis 17% (n=26) and Hydatid Disease 12% (n=18) were the common presentations respectively. Brain Glioma 47% (n=40) was the leading cause of brain tumor, followed by Pituitary Tumors 32% (n=28). Among the Pituitary Tumors; Prolactinoma 8% (n=7) was the most common brain tumor. Primary CNS Lymphoma 12% (n=11) was the third common cause of brain tumor in our study. Meningioma (n=2) and Acoustic Neuroma (n=2) were the other primary brain tumors observed in our study. Tuberculous Osteomyelitis 40% (n=11) was the most common spinal cord presentation followed by Syringomyelia 22% (n=6) and Compressive Myelopathy 14% (n=4). Cord contusions (n=2) & Ankylosing Spondylitis (n=2) were the other spinal cord etiological presentations.

DISCUSSION

The available information on the pattern and frequency of major neurological disorders in Pakistan is scanty and

limited mainly to hospital-based populations which may not be the total representative of the community.[8] This study shows that headache is the most common presentation, followed by cerebrovascular accidents and epilepsy in the out-patient neurology clinic. However in the United States, stroke is the commonest neurological disease followed by epilepsy.[9] InUnited Kingdom (UK), a survey of the out-patient clinic consultations with neurologists showed blackouts (including epilepsy) to be the most common diagnosis.[10] On the other hand, Epilepsy is the commonest neurological disease encountered by the adult neurologist in neurology clinic in Enugu, Nigeria and also in the neurological problems in the medical clinics in Africa.[11, 12] Despite the lack of population-based studies, the leading presentation of headache, Cerebrovascular accidents and epilepsy among our hospital-based cases reaffirm their importance in public health. Apopulation based study conducted in Karachi, Pakistan by Aziz H et al, compared the prevalence of epilepsy in Pakistan and Turkey, showing the crude prevalence rate of epilepsy was 9.98 in 1000 in Pakistan and 7 in 1000 in Turkey.[7] There is a vast diversity of neurological cases presenting to a neurology clinic, Some of which are medical emergencies. It was also seen that psychiatric and non-neurological cases also pose a major burden on the neurology clinic. As majority of the patients presented as a self-referral / walk-in clinic due to lack of aorganized referral health system; and there were also referrals fromthe emergency department & other specialized clinics in our study. A study in Nigeria reported stroke in 61.6% of cases followed by meningitis and encephalitis in 13.4% and epilepsy only in 3.4%.[13] Indian studies reported a high prevalence of epilepsy in 20.6% 14 while in Ivory Coast where all the patients were admitted for hospitalization, stroke was reported in 42.18% followed by cerebral toxoplasmosis (17.9%) andmeningo-encephalitis in 11.9%.[15] In Madagascar, the most prevalent disease was epilepsy (28.75%) followed by chronic headache (20.95%), peripheral neuropathies (13.75%) and stroke in 11.3%.16Many neurological diseases are chronic such as headache and epilepsy and represent a huge socioeconomic burden for the patients and their families.[17] Early and adequate treatment may prevent chronicity or secondary damage and improves the patients and their family's quality of life. Although the prevalence of stroke represents 22 % of cases, compared to those reported in the majority of African hospital-based studies, this constitute a real human and economic burden.[17, 13, 15, 18] Another aspect of interest in our study is the proportion of non-neurological cases that presented to the neurology clinic. The high number of general medical cases & psychiatric disorders presenting to a neurology clinic suggest that adequate general medical and psychiatric trainings hould be an essential part of the neurologist training.

	Diagnosis	Sub Titles	n	%
1.	Mental Retardation		151	1.6
2.	Metabolic	Dehydration Hypothyroidism Hyperthyroidism Hyperuricemia Hypoparathyroidism Hyperparathyroidism HypocalcemicTetany Total	63 29 24 09 02 02 02 131	 1.4
3.	Sleep Disorder	Insomnia Nightmares Total	49 02 51	 0.5
4.	Cerebellar Ataxia		44	0.46
5.	Arthritis		33	0.35
6.	Radiculopathy	Cervical Radiculopathy Lumbar Radiculopathy Total	13 17 30	 0.3
7	Cerebral Palsy		29	0.3
8.	Vertigo		27	0.3
9.	Myasthenia Gravis		25	0.2
10	Delayed Milestones		17	0.18
11	Demyelinating Disorders	Multiple Sclerosis NeuromyelitisOptica Total	09 07 16	 0.17
12.	Educationally Sub-normal		15	0.16
13.	Motor Neuron Disease		12	0.12
14.	Tinnitus		09	<0.1
15.	Spinal Muscular Atrophy		4	<01
16	Leukodystrophy		02	<0.1
17.	Arnold Chiari Malformation		02	<0.1
18	Undiagnosed		37	0.4

Miscellaneous group of neurological disorders in the neurology outpatient survey. (Table 1)

	Diagnosis	Sub Titles	n	%
01	Peripheral Neuropathies	 Sensory Motor Polyneuropathy Chronic Inflammatory Demyelinating Polyneuropathy Guillain-Barre Syndrome Sensory Neuropathy Motor Neuropathy Total	 78 03 09 04 09 103	 1.1
02	Cranial Neuropathies	 Bell's Palsy Third Nerve Palsy Sixth Nerve Palsy Optic Neuritis Total	 262 07 11 02 282	 3
03	Carpel Tunnel Syndrome		6	<0.1
04	Mononeuritis Multiplex		2	<0.1
05	Muscular Disorders	 Polymyositis Muscular Dystrophy Total	 11 28 39	 0.4

Neuropathies and Muscular disorders in the outpatient survey.(Table 2)

CONCLUSION

The patterns of neurological disorders in our study are similar to that of the majority of African countries. Headache, stroke, epilepsy and intervertebral disc disorders were the commonest diseases encountered.

Almost all the categories of neurological disorders i.e. inflammatory, infective, neoplastic and degenerative diseases were seen in the outpatient neurology clinic.This was a limited study looking at the diagnosis only; however it does provide a snapshot of the spectrum of the neurological diseases in the outpatient department. There is a need for a more structured and detail outpatient study as well as epidemiological survey of the neurological disorder in general population to provide data for a comprehensive prevention and treatment policy.

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Dr. Sardar Alam: Study concept and design, protocol writing, data collection, data analysis, manuscript writing, manuscript review
Dr. Haroon Khan: Data collection, data analysis, manuscript writing, manuscript review
Dr. Khatira Waheed: Data collection, data analysis, manuscript writing, manuscript review