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PATTERN OF NEURO-OPHTHALMIC DISORDERS IN A TERTIARY EYE CENTRE IN NIGERIA.

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ABSTRACT

Aim: To determine the incidence and types of neuro-ophthalmic disorders at the eye clinic of University of Benin Teaching Hospital, Benin City, Nigeria.

Methods: All the new patients presenting to the eye clinic of the University of Benin Teaching Hospital between May 2001 and April 2003 with neuro-ophthalmic disorders were interviewed, examined and investigated when possible. They were analysed in the context of age, gender, diagnosis, major clinical features and visual acuity.

Results: A total of 76 patients with neuro-ophthalmic disorders were seen among a total of 1,698 new patients giving an incidence of 4.47%. The most common disorders were motor nerve palsies (27.6%), optic neuropathies (22.4%) and migraine (14.5%). The most presenting features were poor vision (39.5%), double vision (18.4%) and headache (17.1%). Twenty-nine patients (38.2%) were blind in the affected eye.

Conclusion: The incidence of neuro-ophthalmic disorders is relatively low but constitute a significant cause of ocular morbidity and blindness. Improvement in diagnostic facilities and awareness are required.

Keywords: Neuro-ophthalmic, disorders, neuropathies, palsy. (Accepted 27 September 2006)

INTRODUCTION

Neuro-ophthalmology only became a legitimate medical subspecialty in the 1960s but it has grown exponentially since then.[1] Neuro-ophthalmic disorders are important causes of defective vision and ocular morbidity. They may also represent ocular or orbital manifestations of intracranial or other systemic disorders.

Optic nerve disorders are not uncommon causes of blindness and visual impairment.[2-6] These disorders include optic neuritis and atrophy from various causes, papilloedema, optic nerve tumors and other miscellaneous neuropathies. Optic nerve and meningeal tumors may also cause proptosis.Ocular motor nerve palsies are major causes of strabismus (squint) and double vision. Strabismus has been reported to be relatively uncommon in Africans.[7,8] Ayanru[7] reported that strabismus occurred in 1.9 per thousand population in Benin City, Nigeria while Abiose[8] reported an incidence of 0.7% in school children in Kaduna, Nigeria. Studies from other parts of the world show a prevalence of 1.28% in Japanese elementary school children,[9] 4.6% in Finland[10] and 4.3% in England.[11] In the Nordic countries, 2 to 4% of the population have squint.[12] The reason for the racial differences has not been explained.

At the University of Benin Teaching Hospital, Benin City, Nigeria, neuro-ophthalmic cases are seen along with other cases in the general ophthalmology clinics. In some other developed centres, neuro-ophthalmology cases are seen in special clinics set aside to handle such cases.[1] This study was designed to identify patients presenting with neuro-ophthalmic disorders, determine the incidence and make recommendations on the desirability or otherwise of setting up a specialized neuro-ophthalmology clinic.

PATIENTS AND METHODS

The study was carried out at the ophthalmology department of the University of Benin Teaching Hospital, Benin City, Nigeria. It is a tertiary health center serving Edo and Delta states as well as neighbouring communities in Nigeria. Although there is a neurology unit present in the hospital, there is no neurosurgical unit. Thus, several patients with neuro-

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ophthalmic disorders need to be referred to other tertiary centers in Nigeria that have a neurosurgical unit.

All new patients who presented primarily with neuro-ophthalmic symptoms to the outpatient eye clinic of the University of Benin Teaching Hospital between May 2001 and April 2003 were interviewed using a predesigned questionnaire, examined and investigated when possible. Ocular and systemic examination was carried out on all the patients with special emphasis on the central nervous system.

The age, sex, presenting complaints and duration of the major presenting symptoms were recorded. The major clinical signs in each case were noted. The distance visual acuity was estimated using the Snellen's chart and when it was less than 6/60, the ability to count fingers, perceive hand movement or light was determined. The external ocular examination was done using the pen-torch and the slit-lamp biomicroscope. The fundus was examined using the Keeler specialist ophthalmoscope. Optic nerve lesions were further assessed by color desaturation tests and visual field assessment by the Bjerrum screen or Kowa automated visual field analyzer when indicated. The Bjerrum screen was used before 2003 when the Kowa automated visual field analyzer became available.

The findings on relevant radiological investigations such as plain radiography, orbital ultrasound scan and computerized tomography scan were recorded. Biopsy result was available in one case of optic nerve lesion. Tensilon test was used in the diagnosis of myasthenia gravis.

RESULTS

A total of 1,698 new patients were seen at the consultant outpatient eye clinic of the University of Benin Teaching Hospital between May 2001 and April 2003. There were 871 males and 827 females giving a male-to-female ratio of 1.05:1. The age range was 1 month to 104 years. A total of 76 patients with neuro-ophthalmic disorders were seen in the two years period giving an incidence of 4.47%. The age range for males was 6 months to 79 years and for females, it was 3 months to 75 years. The mean age was 42.4 years (SD12.8). The male-to-female ratio was 1:1.1 (Table 1).The most common neuro-ophthalmic disorders were nerve palsies, optic neuropathies and migraine (table 2). Of the 21 cases of nerve palsies, 11(52.4%) were oculomotor nerve palsies, 1(4.8%) was trochlear nerve palsy, 4(19.1%) were abducent nerve palsies, 3(14.3%) were facial nerve palsies resulting in lagophthalmos and 2(9.5%) had multiple cranial nerve palsies. One of them had total external ophthalmoplegia involving the 3rd, 4th and 6th Cranial nerves while the other had combined 6th and 7th nerve palsy in the right eye. The exact causes of most of these nerve palsies were not determined. Of the 11 cases of oculomotor nerve palsies, 3(27.3%) were presumed clinically to be due to posterior communicating artery aneurysms, 1(9.1%) was due to diabetes mellitus, 1(9.1%) was due to hypertension and the remaining 6(54.5%) were uncertain.

Optic neuropathies were the next most common disorders. Of the 17 cases, 13(76.5%) were optic atrophy and 4 (23.5%) were optic neuritis. Of the 4 cases of optic neuritis, 3(75%) were papillitis and 1 (25%) was retrobulbar neuritis. All the cases were unilateral. The cause of optic atrophy in most cases was not certain. Nutritional and toxic causes were commonly suggested especially in bilateral cases but usually not proven. Two cases (15.4%) were due to trauma and another two (15.4%) were secondary to papillitis.Optic atrophy was bilateral in 3 patients (23.1%) and unilateral in 10 patients (76.9%).

Migraine and tension headaches were the 3rd most common group of disorders accounting for 11 cases. Four cases (36.4%) were due to tension headaches, 3 (27.3%) were ophthalmoplegic migraine, 2(18.2%) were common migraine and 2(18.2%) were classical migraine.There were 7 cases of cortical blindness, 6 (85.7%) of which occurred in children. Three (42.9%) were due to cerebral palsy, 2 (28.6%) were due to prolonged childhood seizures, 1(14.3%) was due to meningitis and 1(14.3%), which occurred in an adult, was due to eclampsia.

Strabismus (squints) accounted for 6 cases. Two cases (33.3%) were due to congenital esotropia and there was one case (16.2%) each for intermittent exotropia, alternating exotropia, congenital exotropia and infantile esotropia.

Proptosis due to neurological causes occurred in 4 cases. They were all unilateral. Three cases (75%) were due to intracranial space occupying lesions, 1 (25%)case was due to optic nerve astrocytoma.Papilloedema due to intracranial space occupying lesions was seen in 4 patients. However, the exact nature of these space-occupying lesions was not determined by CT scan. The diagnosis were largely clinical and on plain radiograph.

Transient episodes of visual loss (amaurosis fugax) occurred in 2 patients (2.6%). Herpes zoster ophthalmicus was seen in 2 patients (2.6%). One of them was a 24 year old female with active infection while the other was a 44 years old female with post herpetic neuralgia. Myasthenia gravis occurred in a

30 year old female who presented with ptosis while blepharospasm occurred in a 62 year old male who presented with constant continuous blinking of 3 years duration.The most common presenting symptoms were poor vision, double vision, headache and squint (table 3). The optic neuropathies and cortical blindness were the main causes of poor vision. Twenty-nine patients (38.2%) had at least monocular blindness and 14 (18.4%) had visual impairment in one eye (table 4). The visual acuity in the eye with the worse vision was recorded when there was visual impairment in both eyes. Bilateral blindness occurred in 11 patients (14.5%) while 6 patients (7.9%) had no light perception (NLP) in one eye.

Table1: **Age and sex distribution of patients with neuro-ophthalmic disorders.**

Age (years)	Sex		Total (%)
	Male	Female	
0-10	6	5	11(14.5)
11-20	6	7	13(17.1)
21-30	5	8	13(17.1)
31-40	4	11	15(19.7)
41-50	4	5	9(11.8)
51-60	6	2	8(10.5)
61-70	3	1	4(5.3)
71-80	2	1	3(4.0)
Total	**36**	**40**	**76(100)**

Table 2: **Types of neuro-ophthalmic presentations.**

Type	Number (%)
Nerve palsies	21 (27.6)
Optic neuropathies	17 (22.4)
Migraine	11 (14.5)
Cortical blindness	7 (9.2)
Squints	6 (7.9)
Proptosis	4 (5.3)
Papilloedema	4 (5.3)
Amaurosis fugax	2 (2.6)
Herpes Zoster Ophthalmicus	2 (2.6)
Myasthenia gravis	1 (1.3)
Blepharospasm	1 (1.3)
Total	**76 (100)**

Table 3: **Major clinical features of neuro-ophthalmic disorders.**

Presenting Features	Number (%)
Poor vision	30 (39.5)
Double vision	14 (18.4)
Headache	13 (17.1)
Squint	6 (7.9)
Proptosis	4 (5.3)
Ptosis	4 (5.3)
Lagophthalmos	4 (5.3)
Frequent blinking	1 (1.3)
Total	**76 (100)**

Table 4: **Best corrected visual acuities in the affected eyes of patients with neuro-ophthalmic disorders.**

Visual acuity	Number of patients(%)
NLP-<CF3m	29 (38.2)
3/60 -<6/60	7(9.2)
6/60 -</18	7 (9.2)
6//18 or better	33 (43.4)
Total	**76 (100)**

DISCUSSION

Neuro-ophthalmic disorders are important causes of defective vision and ocular morbidity. The incidence of neuro-ophthalmic disorders (4.47%) is low. This may be because the University of Benin Teaching Hospital is not the major referral centre for neurological disorders in the country. There is no neurosurgeon available in the hospital and the neurology unit had only recently commenced. Therefore, most neurological cases were referred to the centre of excellence in neurological disorders, the University College Hospital, Ibadan. It may also be because certain neuro-ophthalmic disorders which are quite common among Caucasians are less common in Africans.[7,8] Environmental, cultural and psychological factors may also play a role.[7,13]

Extraocular motor nerve and facial nerve palsies were the most common group of neuro-ophthalmic disorders encountered accounting for 27.6% of cases. As expected, oculomotor nerve palsies were by far the most common type. This finding is quite similar to the finding of a report from Ethiopia[14] in which ocular and facial nerve palsies accounted for 27% of cases. The major problem encountered in the management of these conditions, was in determining the exact

Cause of the nerve palsies. Diagnosis was largely clinical and presumptive. Medical causes due to hypertension and diabetes mellitus were fairly easy to determine, but surgical causes of nerve palsies could not be easily determined in most cases due to lack of facilities for investigations or where they were available, they were very expensive. Diagnostic facilities such as magnetic resonance imaging, computerized tomography and angiography are quite expensive. The cost of computerized tomography scan in the hospital is rather prohibitive and beyond the reach of most of the patients.

Optic neuropathies were the next most common disorders. This comprises mainly optic atrophy and fewer cases of optic neuritis. Along with other optic nerve lesions such as papilloedema and optic nerve tumours, disorders of the optic nerve were the single most common group of neuro-ophthalmic disorders. This is similar to the finding from Ethiopia[14] in which optic nerve lesions accounted for 22% of cases. The exact cause of optic atrophy in most of the cases could also not be determined. Nutritional and toxic causes were most commonly suggested, but not all these patients show evidence of malnutrition or a history of toxic substance ingestion. A possible dietary toxin, cyanogenetic glycoside has been postulated and its relationship to the tropical neuropathic syndromes stressed.[5] Dietary intake of cassava products is high in Delta and Edo states of Nigeria and the toxin is believed to be present in these products although the content varies with their mode of preparation, the species of cassava, the soil, the humidity and the time of the year during which the roots are harvested. Several other causes of optic neuropathies require expensive facilities for their diagnosis and these are either not available or too expensive.Several cases of headache were referred to the eye clinic for refraction and prescription of corrective lenses. Some of these cases were found clinically to be due to migraine. They were the third most common group of neuro-ophthalmic disorders seen in the eye clinic.

Squint, which is a common disorder between Caucasians[10-12] and Asians[9] was relatively less common in the eye clinic. This is in agreement with earlier reports that squint is relatively uncommon in Africans.[7,8] Furthermore, it has been observed that many Africans with squint do not appear to be bothered by the problem.[13] Thus they may not present to the hospital unless there is double vision.

Cortical blindness occurred predominantly in children and was due to cerebral palsy, prolonged childhood seizures and meningitis. The only case that occurred in an adult female was due to eclampsia.

Characteristically, most of these patients were involved in harmful traditional practices and presented late to the hospital.

The most common presenting complaint was poor vision occurring in 39.5% of patients. Almost all of them had at least monocular blindness in the affected eye. Optic neuropathies were the main causes of monocular blindness while bilateral blindness was due also mainly to optic neuropathies and cortical blindness. Some of the patients with nerve palsies presented with poor vision rather than double vision due to the presence of coexisting disorders such as cataract and glaucoma. Some patients with squint also presented with poor vision because amblyopia had resulted from late presentation. The majority of theses patients presented late in advanced and irreversible stages. This is similar to the finding in Addis Ababa.[14]

CONCLUSION

The number of neuro-ophthalmic cases seen in the eye clinic of the University of Benin Teaching Hospital though small constitutes a significant amount of ocular morbidity. Precise diagnosis could not be made in a significant number of cases due to lack of diagnostic facilities. This will be facilitated by the setting up of specialized neuro-ophthalmic clinics and improvement in manpower and diagnostic facilities such as magnetic resonance imaging, computerized tomography scan and angiographic techniques.

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