

Pattern of strabismus in a tertiary hospital in Nigeria: a six-year review

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Abstract

Background: Strabismus (ocular misalignment) is frequently seen in clinical practice. Its prevalence varies in different parts of the world with no sex predilection. Strabismus is a significant cause of ocular morbidity. Esotropia is often the commonest form of presentation among children.

Aim: To determine the frequency and clinical features of patients presenting with strabismus in the ophthalmic clinic a past 6-year period.

Methods: This was a hospital based study of all the patients diagnosed having strabismus in University of Port Harcourt Teaching hospital between January 2007 and December 2013. The medical records of a total of 74 patients who visited the ophthalmic clinic and diagnosed as having strabismus were retrospectively reviewed and subsequently analysed using Statistical Package for Social Sciences (SPSS) version 17 computer soft

ware package. Ethical clearance was obtained from the Ethics committee of the University of Port Harcourt Teaching Hospital.

Results: A total of 12,334 case files were reviewed in this study. Five thousand one hundred and eighty-one (42%) were males and 7,153 (58%) females. A total of 74 cases had strabismus (0.6%). Twenty-three were males and 51 females (M:F=1:2.2). Twenty-eight (37.8%) had alternating squint, twenty-three (31.1%) had esotropia, twenty-one (28.4%) had exotropia and two (2.7%) had hypertropia.

Conclusion: This study confirmed the relatively high frequency of alternating squint and esotropia in patients with strabismus.

Keywords: Strabismus, Prevalence, Pattern

Introduction

Misalignment of the eyes is called strabismus (squint). Misalignment means that the eyes are not lined up to look at the same thing. In every case of strabismus or misalignment, one eye is fixed on what the person intends to look at (the fixing eye) and the other eye is looking at something else (the deviated eye). In order to achieve normal binocular vision, the eyes must see well, be aligned (i.e. looking in the same direction), and be focused properly on the same object. To maintain alignment, the eyes must also move in a coordinated manner, a process involving twelve different muscles (six in each eye). The four recti muscles move the eyes up, down, to the right, and to the left, and the two oblique muscles have more complex actions, helping the eyes to look down and in

(towards the tip of the nose) or up and in (towards the bridge of the nose). Three cranial nerves (oculomotor, abducens and trochlear) are involved in the contraction and relaxation of these muscles and the main coordinating centre is in the brain¹.

Strabismus is a common ocular problem². Although its pathogenesis and precise mode of inheritance is still obscure, several risk factors have been identified. These include maternal cigarette smoking during pregnancy, increasing maternal age and maternal and paternal occupational lead exposures². Recently, it has been suggested that mutation in the albinism genes tyrosinase, P gene and TYRP1 may be responsible for congenital esotropia³. Birch *et al*⁴ in their study observed that high hypermetropia is a risk factor for strabismus. The prevalence of strabismus varies in different

parts of the world. While studies in Africa showed a prevalence of 0.5- 4.4%^{5,6}, its prevalence in other parts of the world vary between 0.9 and 7.4%⁷. There has been no reported statistically significant gender difference in the occurrence of strabismus².

Generally, esotropia is the most common form of strabismus⁸, however, it has been observed that countries farther away from the equator with lower light intensity have a lower prevalence of exotropia⁹.

The aim of this study is to determine the frequency and the presenting pattern of strabismus in the ophthalmic clinic a past 6-year period.

Materials and Methods

This was a hospital-based study of all the patients with diagnosis of strabismus in the University of Port Harcourt Teaching hospital between January 2007 and December 2013. The age, Gender, type of strabismus from the medical records of a total of 74 patients who visited the ophthalmic clinic and were diagnosed having strabismus were retrospectively reviewed.

Ethical clearance was obtained from the Ethics committee of the University of Port Harcourt Teaching Hospital prior to the study.

Relevant information extracted from the case files revealed that visual acuity was assessed using the Snellen acuity chart (Letter and E' Optotype) and picture chart for children and illiterate adults. Extraocular motility assessment and fundscopy done were also noted.

Statistical analyses

All data were cross checked for accuracy, entered and analyzed using Statistical Package for Social Sciences (SPSS)-17 and a pocket sized scientific calculator. Distribution was described as mean and standard deviation and χ^2 was used to determine the statistical significance of the differences between proportions. The level of significance was taken to be $p < 0.05$.

Results

During the six-year period of review, a total of 12,334 patients were seen in the ophthalmology clinic. Five thousand one hundred and eighty-one (42%) were males and 7,153 (58%) females. Out of these, a total of 74 patients were diagnosed with strabismus. This represents a frequency of 0.6%. The age of the strabismic patients ranged from 355 years (mean 10.5 ± 8.2 years). Majority of the patients were children in the 0-10 year age group (Table 1). Twenty- three were 23 males and 51 females (M:F=1:2.2).

Twenty-eight (37.8%) had alternating squint, twenty- three (31.1%) had esotropia, twenty- one (28.4%) had exotropia and two (2.7%) had hypertropia. This difference was found to be statistically significant ($p < 0.05$). The commonest form of strabismus in the study was alternating squint was 37.8% (Table 2).

Tables 1. Age and gender distribution of cases of strabismus in the study

Age(years)	Male	Female	Total (%)
0-5	15	31	46 (62.2)
6-10	3	7	10 (13.5)
11-15	0	3	3 (4.0)
16-20	0	1	1 (1.4)
21-25	1	1	2 (2.7)
26-30	3	3	6 (8.1)
31-35	0	2	2 (2.7)
Above 35	1	3	4 (5.4)
Total	23	51	74 (100)

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Table 2. Pattern of distribution of strabismus in the study

	Hypertropia	Exotropia	Esotropia	Hypotropia	Alternating Squint	Total
Age(years)						
0-5	1	7	20	0	18	46
6-10	0	2	3	0	5	10
11-15	0	0	0	0	3	3
16-20	0	1	0	0	0	1
21-25	0	2	0	0	0	2
26-30	0	4	0	0	2	6
31-35	0	2	0	0	0	2
Above 35	1	3	0	0	0	4
Total (%)	2 (2.7)	21(28.4)	23 (31.1)	0 (0)	28 (37.8)	74(100)

Discussion

The frequency of strabismus in this study was 0.6%. Children in the age group 0-5 years constituted the dominant age group of cases in this study accounting for 62.2% of the total number of patients that presented with strabismus within the period of this study. Females constituted 68.9% of cases in this study and males 31.1%. The predominance of females with strabismus was also noted by Giorgis and Bejiga¹⁰ in Ethiopia where females constituted 58.6% and males 41.4% of cases seen. However, some authors have observed predominance of males: Azonobi *et al*, in Ilorin⁸ noted that males constituted 59.4% while females were 40.6% of strabismus cases. The difference in the predominance of females in this study and those of others as mentioned earlier is a subject of further research.

The predominate type of strabismus is alternating squint accounting for 37.8% cases while esotropia accounted for 31.1% and exotropia accounted for 28.4%. This is similar to findings of Azonobi *et al*⁸ at Ilorin in which esotropia accounted for 31.25%. In Ilesha, Western Nigeria, a study, found exotropia in 70% of cases and esotropia in 30%¹¹. In a study in Ethiopia¹⁰, it was found that esotropia constituted 78.1% and in Ireland (U.K)⁹, it was found that esotropia was five times more common than exotropia. Workers in Hong Kong¹²,

reported exotropia in 65.2% of cases and esotropia in 27.4% of the cases studied.

The above findings illustrate the wide variation in the pattern of strabismus in different parts of the world. The reason for this is not known but Mvogo *et al*¹³ suggests that duration and intensity of sunlight as well as racial factors may play a major role. The higher the intensity of light (as is the case in tropical region of the world), the higher the frequency of exotropia. The higher prevalence of alternating squint and esotropia in this study despite a high intensity of light in the place of the study may be due to racial factors.

This study limitations include the fact that it is a hospital-based study and findings may not be easily extrapolated to the general population. A community based-study may be necessary to assess the frequencies of different types of strabismus in our environs.

Conclusion

The frequency of strabismus in the population of this study is low. Like studies done earlier, strabismus is more common among females than in males. Alternating squint is the most frequent form of presentation and children within zero and ten years of age are mostly affected.

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