Journal of Clinical Ophthalmology and Eye Disorders

Research Article
Published: 01 Aug, 2019

Screening of the Ametropia of the Children at School Age: Experience of Moulay Ismail Hospital of Meknes (Morocco)

Bouzidi A, Elouafi A, Laayoune A, Iferkhasse S and Laktaoui A*

Department of Ophthalmology, Military Hospital Moulay Ismail Meknes, Morocco

Abstract

Purpose: Describe the frequency and determinants of child school Ametropia between 6 and 15 years during the period August 2008 and 2009 at the Hospital Moulay Ismail.

Material and Methods: The study consists in the measurement of visual acuity with search of amblyopia and strabismus and other ocular diseases. A database of refractive errors, amblyopias and strabismus was analyzed to determine the prevalence and risk factors of ametropia in schoolchildren in this age group.

Results: The study concerned a lot of 502 children. The prevalence of myopia, hyperopia and astigmatism were 3.16%, 1.06% and 0.16%. Amblyopia had a prevalence of 0.8%.

Conclusion: The prevalence of myopia was the highest among all ametropias. Systematic visual acuity in children at school age seems necessary for a good schooling.

Keywords: Low vision; Ametropia; School health

Introduction

Ametropia may be considered to be one of the preventable causes of low vision in children. The Vision 2020 program, which aims to eliminate avoidable low vision, has given high priority to the correction of child ametropia, which is classified as a cause of low vision in children [1]. Several children with uncorrected ametropia are asymptomatic hence the value of mass screening that would allow early detection and adequate treatment. In countries with a high rate of child education, integrating ophthalmic examination into the school health program is highly recommended [2].

In our work, we report the experience of the military hospital Moulay Ismail of Meknés in the screening of ametropia and other visual pathologies of children between 6 and 15 years old from military families. At the end of this study, we will propose guidelines for ophthalmological monitoring of children in this age range.

Material and Methods

This study was conducted between August 2008 and July 2009. Verbal consent from parents was obtained for the participation of their children in this study. The research protocol used adheres to the Helsinki Declaration for Basic Research Involving Humans.

Our team includes six ophthalmic doctors and one orthoptist serving in the Ophthalmology Department at the Moulay Ismail Military Hospital in Meknes.

An investigation was started including a detailed history of any previous ocular pathologies, possible medical or surgical treatment or possible family history of refractive errors. Visual acuity by far was taken using the snellen E scale. If the child has a lower Visual acuity at $6/10^{th}$ without correction at the level of one eye, the child is declared low vision [2]. The Hirschberg test was used to determine the presence or absence of strabismus. As soon as a cover test is used to confirm this diagnosis. If the eyes move after lifting the screen, the child has a "phoria", and if the angle of deviation does not change the screen test, the child will have a tropie (sup at 5 degree or 10 diopters). Ocular Motility was examined in nine positions of the eyes to eliminate a paralytic or restrictive strabismus. The anterior segment is considered a lamp a slot to detect a possible cataract, congenital anomalies such an enophthalmos, microphthalmia, megalocornea or old stigmas of ophthalmic surgery.

In the presence of eye pathology or symptoms of eye fatigue, was used to the method of

OPEN ACCESS

Correspondence:
Bouzidi A, Department of Ophthalmology, Military Hospital Moulay Ismail Meknes, Morocco, E-mail: bouzidiadil2@gmail.com

Received Date: *17 Jun 2019*
Accepted Date: *29 Jul 2019*
Published Date: *01 Aug 2019*

Citation:
Bouzidi A, Elouafi A, Laayoune A, Iferkhasse S, Laktaoui A. Screening of the Ametropia of the Children at School Age: Experience of Moulay Ismail Hospital of Meknes (Morocco). J Clin Ophthalmol Eye Disord. 2019; 3(1): 1030.

Figure 1: Iris heterochromia in a child with 15 years old.

Figure 2: Ischemic optic neuropathy of the left eye with white retinal edema in the territory of the cilioretinal artery in a pregnant woman.

Table 1: Characteristics of children examined.

Variables	Categories	Number	%
Sex	Male	293	58.5
	Female	208	41.5
Age groups	6 to 8 years	160	31.9
	9 to 12 years	253	50.5
	13 to 15 years	88	17.6
Children under occlusion		1	0.2
Total		502	100

interference to eliminate any accommodative spasm. For interference, one placed a glass of +10 D on amount of test, and then began to gradually decrease the power of the glass while the child continued to set the scale of vision.

There is then a retinoscopy with a glass of +1.5 D on the right mount and asked the child to attach an object to 6 m to relax its accommodation. Children with Visual acuity of 6/10e with a retinoscopy which confirms the absence of any refractive error by the previously described method, were excluded from any subsequent refractive procedure.

For other children, after an orthoptic examination and evaluation of the anterior segment, 1-2 drops of cyclopentolate 1% eye drops was instilled twice in 20 min, and then a cycloplegic refraction was carried out by retinoscopy. Visual acuity, the type of ametropia and correction were observed in children under occlusion.

Myopia was defined when the measurement of objective refraction was greater than or equal a 0.75 diopter spherical equivalent in either eye. Hyperopia was defined when the measurement of objective refraction was greater than or equal a 0.75 diopter spherical equivalent in either eye. Hyperopia was defined when the measure of objective refraction was superior has +2.00 diopters spherical equivalent in one or both eyes, assuming that none of the two eyes is short-sighted. Astigmatism was considered as significant that beyond 1.00 D.

Table 2: Prevalence of uncorrected refractive errors.

	Ametropia number	Frequency
Myopia	16	3.16
Hyperopia	5	1.06
Astigmatism	1	0.16

Table 3: Prevalence of the diopter adjustment wheel depending on its type and age.

		Examined	Uncorrected myopia	Frequency
Myopia	6 to 8 years	160	2	1.4
	9 to 12 years	253	10	4.2
	13 to 15 years	88	3	3.4
Hyperopia	6 to 8 years	160	1	0.9
	9 to 12 years	253	3	1.2
	13 to 15 years	88	1	0.8

Table 4: The uncorrected myopia in children from 6 to 15 years and its predictors.

Variable		OR	Confidence value at 95% of p
Sex	Male	0.98	0.76-1.25
	Female	1	0.86
Age group	6 to 8 years	0.27	0.17-0.41
	9 to 12 years	0.81	0.62-1.07
	13 to 15 years	1	0.13

To establish the frequency of astigmatism, worth more than a 2D was taken into account, while for values below a 2 D, their spherical equivalent was calculated using the following formula: spherical equivalent = value of the sphere + (value of the cylinder/2) in diopters (d) [3].

The estimation of the prevalence of uncorrected refractive errors is performed using parametric methods and analytical calculations to a single variable. Some parameters were also taken into account as the age and sex of the children.

All children with uncorrected Ametropia were treated with occlusion and followed throughout this period in our training.

We first established a descriptive study with point prevalence and 95% confidence interval (CI95). We then calculated the Odds Ratio (OR) that measures the risk ratio of ametropic risk to the risk of emmetropia.

Results

Our study involved a batch of 522 children who were randomly selected. The age group was between 5 and 15 years old. Screening coverage was 502/522 (96.3%), and uncorrected refractive errors were the cause of low vision in 14 (50%) children (Table 1). The frequency of uncorrected ametropia was 5.46%. The prevalence of myopia was 3.16%, hyperopia was 1.06%, and astigmatism was 0.16% (Table 2). We also calculated the number of myopia and hyperopia not corrected according to the different age groups (Table 3). An analysis was conducted to determine the predictors of uncorrected

myopia (Table 4). Aged between 6 and 9 years (OR=0.27) seems to be a predictor of uncorrected near sightedness.

Amblyopia was found in 4 (0.8%) children. Las factors amblyogenic for low vision children were also noted. Three of the children's ensemble (0.7%) was anisometropes, only one was squinting (0.1%). The causes of low vision in children were evaluated. We found 14 children with uncorrected ametropias, 4 with amblyopia, 1 child with a corneal opacity. A child (3.65%) on 27 children with a diopter adjustment wheel used a treatment by occlusion at the time of the review.

Discussion

The prevalence of refractive errors uncorrected and especially myopia was high in 6 to 15 years age group. We found also pathologies blinding as a corneal clouding in a child, and one cataract in one another. And if strabismus was detected in a child, amblyopia, is found in 6 children. Low vision children require treatment in time, otherwise the amblyopia will become deep and irreversible [4]. Our study suggests that the uncorrected near sightedness was commonly detected in older children. Through this study is focused on ametropia unadjusted rather than the risk factors for refractive errors.

The high prevalence of refractive errors not corrected in our batch joined the data from the literature in this area [5,6]. This prevalence is estimated at 5.65%. Myopia is the most common refractive errors not corrected in our study, its frequency was significantly higher in our lot. A comparative study conducted by Dandona et al. [7] has found a prevalence of myopia with a value of 5%. Khandokar and Abdu-Helmi [8] in the Sultanate of Oman and Morgan et al. [9]. In Mongolia have reported numbers of short-sightedness of 4.1% and 5.8% respectively in school children. Despite the race difference between these two studies and ours, the prevalence was the same. At Taiwan, the prevalence and severity of myopia were significantly elevated among a population of children at school age [10].

Lithander [11] found a prevalence of high myopia (+7 d) among girls 12 years was 2.82% compared with the 0.13% of the general population. This could be a genetic predisposition has high myopia as well among girls than boys [11] in our study were not observed as high prevalence of myopia among girls of school age.

By comparing the results of different studies, note that the prevalence found in children at the beginning of schooling was high compared to slightly older children.

Czepita et al. [12] has noted that gender influenced the frequency of myopia and hyperopia among school children in aged between 6 and 18 years it is interesting to note that when a variable solid analysis was performed, the sex factor was not significantly associated with refractive errors not corrected in our lot, however the boys had a high risk of ametropias not corrected after consideration of other parameters. This side maybe more deeply studied conducting a longitudinal study.

Conclusion

The uncorrected ametropia figure among the preventable causes of low vision in children at school age. This study allows to get an idea on the prevalence of refractive errors in children enrolled in our region. This prevalence could be extrapolated to all schoolchildren in the country. The identification of this ametropia and their correction as soon as possible would ensure these children a good education.

References

1. Resnikoff S, Pascolini D, Mariotti SP, Pokharel GP. Global magnitude of visual impairment caused by uncorrected refractive errors in 2004. Bull World Health Organ. 2008;86(1):63-70.
2. World Health Organization. Elimination of avoidable visual disability due to refractive error: report of an informal planning meeting. Geneva: WHO; 2000. p. 6-10.
3. David Abrahams. Astigmatism In: Duke, editor. Elder's Practice of Refraction. 10th ed. Butterworth Heinemann; 2002. p. 65.
4. Webber AL. Amblyopia treatment: An evidence-based approach to maximizing treatment outcome. Clin Exp Optom. 2007;90(4):250-7.
5. Murthy GV, Gupta SK, Ellwein LB, Muρoz SR, Pokharel GP, Sanga L, et al. Refractive error in children in an urban population in New Delhi. Invest Ophthalmol Vis Sci. 2002;43(3):623-31.
6. Dandona R, Dandona L, Srinivas M, Sahare P, Narsaiah S, Muρoz SR, et al. Refractive error in children in a rural population in India. Invest Ophthalmol Vis Sci. 2002;43(3):615-22.
7. Dandona R, Dandona L, Shrinivas M, P Giridhar, Catherine A, Rao GN. Population- based assessment of Refractive errors in India -the Andhra Pradesh Eye Study. Clin Exp Ophthalmol. 2002:30(2):84-93.
8. Khandekar R, Abdu-Helmi S. Magnitude and determinants of refractive errors in Omani school children. Saudi Med J. 2004;25(10):1388-93.
9. Morgan A, Young R, Narankhand B, Chen S, Cottriall C, Hosking S. Prevalence rate of Myopia in schoolchildren in rural Mongolia. Optom Vis Sci. 2006;83(1):53-6.
10. Lin LL, Shih YF, Hsiao CK, Chen CJ, Lee LA, Hung PT. Epidemiologic study of the prevalence and severity of myopia among school children in Taiwan in 2000. J Formos Med Assoc. 2001;100(10):684-91.
11. Lithander J. Prevalence of myopia in school children in the Sultanate of Oman: A nation-wide study of 6292 randomly selected children. Acta Ophthalmol Scand. 1999;77(3):306-9.
12. Czepita D, Mojsa A, Ustianowska M, Czepita M, Lachowicz E. Role of gender in the occurrence of refractive errors. Ann Acad Med Stetin. 2007;53(2):5-7.