Original Article

Peripheral Retinal Degenerative Lesions in Myopic Patients at the Yaoundé Central Hospital

Lésions dégénératives de la périphérie rétinienne chez les sujets myopes à l'Hopital Central de Yaoundé

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ABSTRACT

Purpose. To describe peripheral retinal degenerations in myopic eyes in a hospital-based setting. **Patients and methods.** Myopic patients aged at least 5 years old seen between January and December 2015 in whom peripheral retinal examination was done using a 3-mirror lens were included. Myopia was defined as a spherical equivalence of ≤ -0.50 D on automatic refraction (following cycloplegia with cyclopentolate and tropicamide in patients < 40 years). Myopia < - 6 D was considered pathologic. Chi-square test was used to compare proportions and a significance level was set at 5%. **Results.** A total of 74 eyes of 37 patients (of whom 62.2% females) were included. The age group of 20-30 years represented 37.8%. Non-pathologic myopia was present in 42 eyes (56.8%). The prevalence of degenerative lesions was 89.5% (95.2% in those with non-pathologic myopia and 87.5% in those with pathologic myopia) P=0.227. The most frequent degenerations were snowflakes, white without pressure and pigmentary degeneration. Lattice degeneration and retinal hole were found in 8.1% (n=6) and 9.5% (n=7) of eyes respectively. Lattice degeneration occurred more frequently in pathologic myopia, though the difference was not significant (15.6% vs 4.8%; p=0.1). Retinal hole was more common in eyes with pathologic myopia (p=0.03). **Conclusion.** Careful examination of the peripheral retina is recommended in all forms of myopia. Patient education on vitreous and retinal detachment symptoms and the need to seek urgent care is essential.

RÉSUMÉ

But. Décrire les lésions dégénératives de la périphérie rétinienne observées chez des sujets myopes en milieu hospitalier. **Patients et méthodes.** Nous avons colligé tous les dossiers des patients myopes âgés d'au moins 5 ans reçus de Janvier à Décembre 2015 et chez qui un examen au verre à trois miroirs de Goldman avait été réalisé. L'œil est considéré myope si l'équivalence sphérique est ≤ -0,50D après réfractométrie automatique (avec une cycloplégie systématique chez les patients de moins de 40 ans). Une myopie <- 6 D est considérée comme pathologique. Le test de khi-carré a été utilisé pour comparer les proportions avec un seuil de significativité p ≤ 5%. **Résultats.** Nous avons retenu 37 patients (74 yeux) parmi lesquels 62,2% étaient des femmes. La tranche d'âge de 20 à 30 ans regroupe 37,8% des patients. Pour 42 yeux (56,8%), la myopie n'est pas pathologique. La prévalence des lésions dégénératives est de 89,5% (95.2% chez les patients avec une myopie non pathologique et 87.5% dans le groupe opposé). Les dégénérescences les plus fréquentes sont les givres, les blancs sans pression et les dégénérescences pigmentaires. Les dégénérescences palissadiques et les trous rétiniens ont été observés dans 8,1% (n=6) et 9,5% (n=7) des cas respectivement. Ces deux lésions sont les plus fréquentes dans les cas de myopie pathologique. **Conclusion.** Un examen minutieux de la périphérie rétinienne doit être systématique chez tous les patients myopes. L'éducation est essentielle pour la prévention et la prise en charge précoce des complications de la myopie.

INTRODUCTION

Myopia is a refractive error in which parallel rays are brought to focus in front of the retina. Over 22% of the current world population is estimated to be myopic [1]. In Cameroon, the prevalence is lesser, with only 4.5% of the population being myopic[2]. Myopia can be responsible for visual impairment either directly if uncorrected; or indirectly, from retinal complications such as myopic macular degeneration and retinal detachment. Myopia also increases the risk of other ocular pathologies such as glaucoma and cataract [3,4].

Retinal degenerative changes occur both in the posterior pole and in the peripheral retina. Commonly reported changes include chorioretinal atrophy, lattice degeneration, pigmentary degeneration, lacquer cracks, posterior staphyloma, Fuch's spot, macular degeneration, retinal breaks and detachment, and posterior vitreous detachment [5,6]. Peripheral retinal degenerations such as retinal breaks and lattice degeneration predispose to retinal detachment. Nwosu *et al* in a tertiary eye hospital in Nigeria, reported lattice degeneration to be the 3rd commonest ocular risk factor for retinal detachment [7]. Expertise and resources to manage retinal detachment are limited in our setting. Therefore, systematic examination of myopic eyes for identification and monitoring and/or treatment of degenerative lesions are of utmost importance. To the best of our knowledge, no study has reported the prevalence of peripheral retinal degeneration in our setting.

PATIENTS AND METHODS

A retrospective descriptive study was carried out at the ophthalmic unit of the Yaoundé Central Hospital. Medical records of myopic patients aged at least 5 years old seen between January and December 2015 in whom retinal examination was done using a 3-mirror lens were included. Those with a history of ocular trauma, uveitis or retinopathy were excluded. This retrospective study used data collected from medical records, which was rendered anonymous and used only for publication purposes. All patients had undergone ophthalmic examination that comprised measuring uncorrected distant visual acuity, slit lamp examination, automatic refraction (under cycloplegia for those under 40 years of age), and retinal examination with a Goldmann 3 mirror lens following pupillary dilataion. Cycloplegia was obtained by alternatively instilling one drop of cyclopentolate 0.5% and one drop of tropicamide 0.5% at intervals of 5 minutes for a total of three drops per cycloplegic agent. Refraction was measured 20-30 minutes after the last drop.

Myopia was defined as a spherical equivalence of ≤ -0.50 D and myopia < - 6 D was considered pathologic [8]. Data collected included age, sex, severity of myopia, type of retinal peripheral degenerative lesion. Chi-square test was used to compare proportions and a significance level was set at 5%. Lattice degeneration and retinal breaks were considered as vision-threatening peripheral retinal degenerations.

RESULTS

A total of 74 eyes of 37 patients were included. Females represented 62.2% of the study population. The mean age was 24.8 ± 11.9 years, with the age group of 20-30 years representing 37.8% of the study population. Non-pathologic myopia was present in 42 eyes (56.8%). Mean spherical equivalent ranged from -0.50 D to -22.0 dioptres with a mean of 3.11 ± 3.3 dioptres.

One or more peripheral retinal degenerative lesions were present in 68 eyes (89.5%). Peripheral retinal degenerative lesions were found in 95.2% of those with non-pathologic myopia (n=40/42) and in 87.5% of those with pathologic myopia (n= 28/32). There was no statistical difference between both groups, p=0.227. The distribution of the different lesions found is shown in figure 1. The most frequent degenerations were snowflakes, white without pressure and pigmentary degeneration.

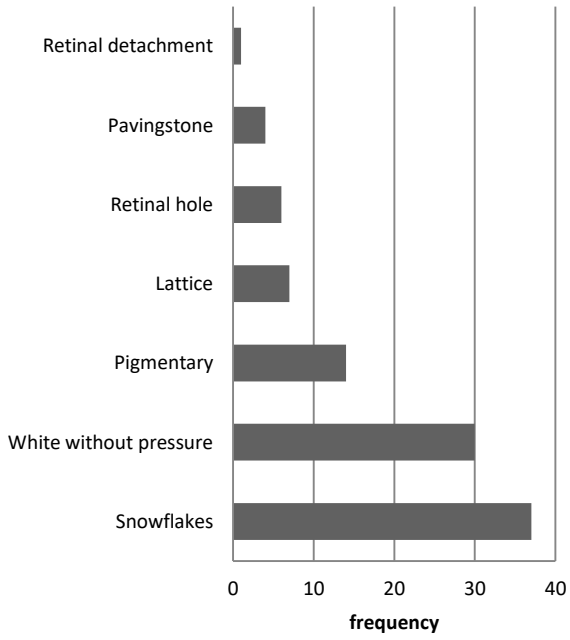

Fig 1: distribution of retinal peripheral lesions in myopic eyes

Lattice degeneration (figure 2) and retinal hole (figure 3) were found in 8.1% (n=6) and 9.5% (n=7) of eyes respectively. Lattice degeneration occurred more frequently in pathologic myopia (15.6%) than in non-pathologic myopia (4.8%). This difference was however, not significant, p=0.1. Retinal hole was more common in eyes with pathologic myopia (15.6% vs 2.9%, p=0.03).

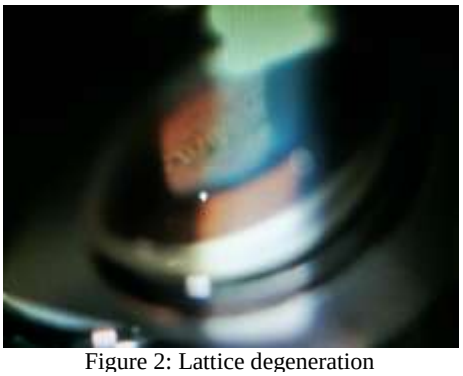

Figure 2: Lattice degeneration

Figure 3: retinal hole

DISCUSSION

In this cross-sectional hospital-based retrospective study of asymptomatic myopes, the prevalence of peripheral retinal degenerative lesions was 89.5%. Large variations exist in the literature due to different study populations and study designs. Peripheral retinal degenerative changes were identified in 33% of eyes in highly myopic children ≤ 10 years of age in a tertiary hospital [9]; and in 56.1% of eyes in adults with high myopia in a cross-sectional community-based study [10].

In this study, we found no statistical difference between the prevalence of peripheral retinal degenerative lesions in pathologic and non-pathologic myopes. Several studies have demonstrated increased prevalence of peripheral retinal degenerations in association with high myopia [5,11]. Our sample size is smaller than most reported studies as myopia is not common in our setting [2]; and this could explain the difference. The absence of pre-school screening programmes in our setting can also be responsible for bias due to self-selection of the population; as only those who feel a need for visual correction visit the hospital.

The most frequent degenerations we found were snowflakes, white without pressure and pigmentary degeneration. Lai et al in Hong Kong adults, reported that pigmentary degeneration followed by white without pressure was the commonest lesion [10]; while Bansal et al in American children, reported the most common being lattice degeneration white without pressure and retinal holes [9].

Peripheral retinal degenerative lesions such as lattice degeneration and retinal holes or breaks, which are important risk factors for retinal detachment, were found in 8.1% and 9.5% of eyes, respectively. This prevalence of lattice degeneration is similar to that reported by Ndiaye *et al* in Senegal (8%) [12]. The higher prevalence of retinal holes compared to lattice degeneration can be explained by the fact that atrophic retinal holes frequently occurred within other degenerative areas.

Retinal hole was more common in eyes with pathologic myopia (15.6% vs 2.9%) corroborating the findings of Ndiaye *et al* (12% vs 2%) [12] and that of other authors who report increasing lesions with increasing severity of myopia [5,11]; however, Hyams and Neuman in a study on 332 myopic eyes found no significant correlation between the frequency of retinal breaks and the degree of myopia [13].

Axial length measurements in order to ascertain axial myopia were not carried out in this study. Axial elongation explains the physiopathology of peripheral retinal lesions owing to mechanical stretching and thinning of the retina [14]. However, literature is not unanimous on the effect of axial length on the prevalence of peripheral degenerative lesions. Some authors report no statistical significant effect [15]; while other report a correlation between presence of a lesion and a longer axial length [5,11,16]. Yura, specifically studied the type of axial elongation and concluded that at each axial length, lattice degeneration was more frequent in eyes without posterior staphyloma (the entire eye elongates) than those with posterior staphyloma (only the posterior pole elongates)[11] .

CONCLUSION

In this group of asymptomatic myopes, up to ten percent present vision-threatening peripheral retinal degeneration. Careful examination of the peripheral retina is recommended in all forms of myopia. Patient education on vitreous and retinal detachment symptoms and the need to seek urgent care is essential.

DISCLOSURE

The authors report no conflicts of interest in this work

AUTHORS' CONTRIBUTIONS

Conception and design: DVA, NAF, EMSR
Acquisition of data: NAF, OD, AZME, MTC, NMB
Analysis and interpretation of data: DVA, NAF
Drafting and revising the manuscript: DVA, EMSR, EE, EMC
Final approval: EMC

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