

TYPES OF PERIPHERAL RETINAL DEGENERATIONS IN HIGHLY MYOPIC IRAQI PATIENTS

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ABSTRACT

Purpose: To determine the types of peripheral retinal degenerations in highly myopic Iraqi patients

Design: cross sectional study

Participants: Two hundred patients with high myopia attending the outpatient clinic of ophthalmologic department in Alkadhimiya teaching hospital in Baghdad and AL-Sadr teaching hospital in Basrah from the period of July 2008 to march 2010.

Methods: Each patient was examined thoroughly starting with visual acuity and refraction to determine the degree of myopia followed by anterior segment examination to exclude media opacity and inflammatory eye diseases then the pupil was dilated and the vitreous with the peripheral retina were examined by the indirect ophthalmoscope and then by the three mirror.

Results: One hundred twenty two (61%) patients were found to have posterior vitreous detachment. The peripheral retina showed the following types of retinal changes and degenerations: 66(33%) patients had pigment clumps, 54(27%) patients had paving stone degeneration, 24(12%) patients had snow flakes degenerations, 20(10%) patients had lattice degeneration, 10(5%) patients had peripheral cystoids degeneration, 6(3%) patients had white without pressure degeneration and only 20(10%) patients had normal peripheral retina.

Conclusions: high myopia is a pathological condition that predisposes the patient to peripheral retinal degenerations. Most of the patients in the study group had a benign type of degeneration while a minority had a more serious type of degeneration. Three mirror examinations is important in high myopia to detect these degenerations and to prevent eventual complications.

INTRODUCTION

Myopia may result from excessive refractive power (refractive myopia) or from expansion of the sclera shell resulting in axial elongation (axial myopia) that causes the retinal complications. The retinal changes of myopia do not strictly correlate with the degree of refractive error, but the likelihood of the appearance of pathologic changes in the retina clearly increases in eyes with in or greater than (-6) diopters of myopia which is termed "pathologic" or high myopia.^[1] The prevalence of high myopia varies considerably in different ethnic groups and has been estimated to be around 10% in Asian population.^[2] Extensive peripheral retinal changes are invariably present in pathologic myopia and increased axial length.^[3-6] Benign changes include "paving stone" degeneration, "white without pressure", peripheral cystoid degeneration, and snow flecks.^[7-9] Posterior vitreous detachment tends to occur at an earlier age in myopia and there is a higher incidence of lattice degeneration, snail

track degeneration and diffuse chorioretinal atrophy with associated holes.^[10,11] The retina is relatively thin compared with the emmetrope. The risk of retinal tears and retinal detachment which is sometimes bilateral is significantly higher than in emmetropic persons.^[12,13] The importance of these peripheral retinal degenerations comes from the fact that some of them may predispose the myopic individual to retinal detachment and therefore their detection during ocular examination may warrant prophylactic treatment either by laser or less commonly by cryotherapy.

The aim of this study is to determine the types of peripheral retinal degenerations in highly myopic Iraqi patients

PATIENTS AND METHODS

This cross-sectional study was done on 200 highly myopic patients in the outpatient clinic of Alkadhimiya Teaching Hospital in Baghdad and

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Al-Sadr Teaching Hospital in Basrah, from the period of July 2008 to March 2010. Either the right or the left eye of each patient was chosen. We have excluded highly myopic patients with significant ocular media opacity, refractive myopia, myopes with previous retinal laser treatment, myopic patients with uveitis, previous trauma or surgery, aphakic myopes and symptomatic patients with floaters or photopsia. The patients were subjected to full examination including visual acuity test with Snellen chart, refraction to determine the degree of myopia using "Heine" retinoscopy and "Tomey" autorefractometry, slit lamp examination, pupil dilation with tropicamide 1% and phenylphrine 10% eye drops then retinal examination by indirect ophthalmoscope and "Goldman" three mirror lens with the use of hydroxy propyl methyl cellulose. Children were excluded from the study because of difficulty in their examination.

RESULTS

The 200 patients included in this study ranged in age from 20-70 years (mean age 41.45 ±13.87). One-hundred sixteen patients were females while 84 patients were males (Table-1).

Table 1. Age and sex distribution of patients

	Male		Female	
	No.	%	No.	%
20-29	10	11.9	30	25.9
30-39	23	27.4	22	19.0
40-49	33	39.3	13	11.2
50-59	3	3.6	45	38.8
60-70	15	17.9	6	5.2
Total	84	100.0	116	100.0

P-value ≤ 0.001

The myopic refractive error ranged from -6 diopter to - 25 diopter (mean refractive error is 13.21 ±8.43) (Table-2).

Table 2. Degree of refractive error in examined patients

Refractive error	NO.	%
(-6) – (-10) D	83	41.5
(-11) – (-15) D	61	30.5
(-16) – (-20) D	34	17
(-21) – (-25) D	22	11
Total	200	100

P ≤ 0.001

Examination with the three mirror revealed that 122(61%) eyes examined had posterior vitreous detachment (PVD) while PVD was absent in 78 eyes (39%) as shown in (Table-3).

Table 3. Distribution of PVD with age

Age group	PVD		NO PVD	
	No.	%	No.	%
20-29	15	12.3	25	32.1
30-39	25	20.5	20	25.6
40-49	31	25.4	15	19.2
50-59	35	28.7	13	16.7
60-70	16	13.1	5	6.4
Total	122	100.0	78	100.0

P-value ≤0.05

Examination of the peripheral retina revealed the following retinal changes: 66 eyes (33%) had pigment clumps, 54 eyes (27%) had paving stone degeneration, 24 eyes (12%) had snow flecks degenerations, 20 eyes (10%) had lattice degeneration, 10 eyes (5%) had peripheral cystoids degeneration and 6 eyes (3%) had white without pressure degeneration of the peripheral retina (Table-4).

Table 4. Types of peripheral retinal changes in the study group

Peripheral retinal changes	NO.	%
Pigment clump	66	33
Paving stone	54	27
Snow flecks	24	12
Lattice	20	10
Peripheral cystoid degeneration	10	5
White without pressure	6	3
Normal	20	10
Total	200	100

DISCUSSION

Epidemiological studies have demonstrated increased prevalence of peripheral retinal degenerations in association with high myopia and increased axial length.^[14] Among the different types of peripheral retinal degenerations in high myopia, lattice degeneration is the most important peripheral retinal degeneration, which can predispose to rhegmatogenous retinal detachment. This is because retinal tears can develop at the posterior and lateral margins of the lattice degeneration caused by strong vitreo-retinal adhesions following posterior vitreous detachment.^[14] This study shows that 61% of patients had posterior vitreous detachment (PVD). This value is very close to that obtained by Hikichi et al, in which it was 62.3%.^[15] Other clinical studies show that the incidence of PVD was found to be 53% in persons older than age 50 and 65% in those over age 65.^[16] It is well known that PVD is more common in myopes occurring 10 years earlier than in emmetropic and hyperopic. Fifty four patients (27%) in the current study had paving stone degeneration which is a yellowish white area sometimes surrounded by hypertrophic retinal pigment epithelium. They are never the site of primary retinal break and they do not warrant any form of treatment. It was reported that paving stone degeneration is present in 22% of adult patients and is bilateral in 38% of them and prevalence

increases markedly with increased age.^[17] The figure of this study is higher probably because it considers the highly myopic patients only, while the other study considered the general population. In the current study, 20 patients (10%) had lattice degeneration. Other studies show that lattice degeneration is present in nearly 7% of adult eyes.^[18] However, this figure is in the general population. A cross-sectional prevalence survey conducted by Lam et al in Hong Kong demonstrated that the prevalence of lattice degeneration in highly myopic patients is 12.2%. This value clearly exceeds that obtained in our study.^[19] This difference may be attributed to ethnic variations and to the small number of patients in the current study. The peripheral retina was normal in 66 eyes (33%) except for the presence of clumps of pigmentation scattered in the retinal periphery. Pigment clumps is an innocent event that does not predispose to retinal break formation. Another type of degeneration that was found in (12%) of patients is snow flakes which is a benign condition except when it is arranged in bands, that is called (snail track) degeneration that may be associated with large trophic holes. Peripheral cystoids degeneration was found in (5%) only, while Malley et al reported that this degeneration is present in almost all adults after the age of 20 years.^[20] This is a great difference that is difficult to explain it. Perhaps ethnic variation plays a role. Retinal holes may form in this type of degeneration although it rarely leads to retinal detachment. The last type of degeneration was white without pressure, which was found in (3%) in which the retina has a translucent grey appearance that may lead to giant tears. This type of degeneration is not related to myopia. From this study it can be concluded that high myopia is a pathological condition that predisposes the individual to a variety of complications. One of the important complications is peripheral retinal degeneration, which could be benign or serious. This study shows that benign peripheral retinal degeneration is the most prevalent while the

more dangerous types of degenerations are less common. The study provides a small sample of highly myopic individuals and demonstrates the incidence of the various types of peripheral retinal degenerations. Except for peripheral cystoids degeneration, the incidence of other types of degenerations is close to the international figures.

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