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CLINICAL PROFILE OF PATIENTS OF HIGH AND PATHOLOGICAL MYOPIA-A HOSPITAL BASED STUDY

Ophthalmology

Dr. Jitendra Kumar M.S. Ophthalmology, Professor and Head of the Department, Department of Ophthalmology, M.L.B. Medical College, Jhansi UP

Dr. Archie Gupta Junior Resident, Department of Ophthalmology, M.L.B. Medical College, Jhansi UP

ABSTRACT

Aim: In our study, efforts are made to find out incidence, prevalence, various symptoms and signs of high and pathological myopia in different age groups and their visual acuity. **Method:** This was a prospective study of the Demographic pattern, Posterior segment changes and its effect on visual acuity in patients with Pathological Myopia in 50 cases attending the outpatient department of Maharani Laxmi Bai Medical college ,Jhansi **Results:** Out of these 50 cases of high and pathological myopia, males have higher 56% incidence, majority cases occurs in age group of 11-30 years with axial length lies majorly between 24.00 to 28.00 mm. **Conclusion:** Typical pathological features of pathological myopia include diffuse or patchy chorioretinal atrophy, posterior staphyloma, lacquer cracks, Fuchs spots, choroidal neovascular membrane (CNV), and sometimes even foveoschisis.These pathologic changes often lead to progressive loss of vision due to a number of degenerative changes occurring at the macula.Pathological changes in high myopes start in childhood and become prominent in adulthood.

KEYWORDS

Pathological Myopia, Peripapillary Atrophy, High Myopia, Fundal Changes, Quality Of Life, Lattice Degeneration

I. INTRODUCTION

High myopia (HM) is an important cause of visual loss, especially in the younger population. It has been defined as a refractive error with spherical equivalent exceeding −6 diopters (D) and/or the axial length longer than 26.5 mm[1,2]

Pathological myopia or degenerative myopia refers to high axial myopia with characteristic pathological changes at the posterior pole[3,4,5]. Typical pathological features include diffuse or patchy chorioretinal atrophy, posterior staphyloma, lacquer cracks, Fuchs spots, choroidal neovascular membrane (CNV), and sometimes even foveoschisis[6,7]. The inheritance of pathological myopia can vary from being autosomal dominant, autosomal recessive, X-linked recessive to a monogenic pattern. It may also be associated with certain genetic syndromes: Stickler syndromes Type 1 and 2, Type 4 Ehlers–Danlos syndrome, Marfan syndrome, Noonan and Down's syndrome.

II. MATERIALS AND METHODS

This was a prospective observational study that involved 100 eyes of 50 patients with pathological myopia complaining of diminution of distant vision. Patients were recruited from the Outpatient department of MLB MEDICAL college, Jhansi ,Uttar Pradesh and were followed from 1st november 2022 - 30th april 2023 . It was performed under the Helsinki Declaration of 1975, as revised in 2000. The necessary permission from the Ethical and Research Committee was obtained for the study

Inclusion Criteria

1. All patients who presented to the OPD of MLB medical College Jhansi with the complaint of dimunition of distant vision and diagnosed case of pathological myopia were included.
2. The patients with refractive error of ≥ -6D and with normal Corneal curvature are included in the study.

Exclusion Criteria

1. Patients with ocular systemic diseases(like hypertension, diabetes) that could affect the retina.
2. Patients with other retinal disorders
3. Patients with recent intraocular surgery
4. Patients with the history of trauma
5. Patients with dense cataract
6. Mentally or physically unfit patients

A detailed clinical history and examination of the patient was done with appropriate investigations like slit-lamp examination for anterior segment changes, recording of visual acuity, refraction with 1% Atropine for children, homatropine or phenylephrine or tropicamide eye drops for adults,Post mydriatic test,direct ophthalmoscopy, Indirect ophthalmoscopy: for evaluation of posterior segment and peripheral retinal changes, IOP measurement with Goldman applanation tonometer, keratometry,B-scan,A-scan biometry, gonioscopy and tomography.

Optical coherence tomography examination was done through dilated pupils, OCT examination was done through a dilated pupil using commercially available Cirrus HD-OCT Model 4000 - Carl Zeiss Meditec, Inc., Dublin,California, USA or Spectralis OCT Heidelberg Engineering.

III. OBSERVATIONS AND RESULTS

A total of 50 cases were seen in the out-patient department of ophthalmology, at Maharani Laxmi Bai Medical college ,Jhansi .These 50 cases, with high (> -6.00 Dsph) and pathological myopia are were taken into the study and were followed for 6 months.

In this study, the highest number of high and pathological myopia cases were noted in the age group of 11 – 30 years.

Table 1 Age Distribution

Age group	Numbers of patients
1-10	3
11-20	16
21-30	13
31-40	8
41-50	6
51-60	4

Table2 Gender Distribution

Gender.	Number of patients
Male	28
Female	22

In this study, the incidence of myopia was slightly higher in males accounting to 56 % whereas females accounting to 44%

Table3 : Axial Length Of Eyeball

Axial length	Number of eyes
22.01 -24.00	14
24.01-26.00	26
28.01-30.00	46
30.01-32.00	14

Majority of the cases showed axial length in between 24.01 mm to 28.01 mm.

Table4: Spectacle Power

Spectacle power (in diopters)	Number of eyes
-6.00 to-10.00	70
-10.25 to-14.00	20
-14.25 to -18.00	6
>-18.00	4

Majority of the cases have spectacle power between -6.00 to -10.00 D

Table 4: posterior segment abnormalities in high and pathological myopia

Posterior segment changes	Number Of Cases
Vitreous degeneration	38
Myopic crescent	40
Chorioretinal degeneration	26
Lattice degeneration	12
Posterior vitreous detachment	3
Posterior staphyloma	6
Lacquer cracks	3
Foster Fuchs spots	5
Paving stone degeneration	4
With without pressure	12
Retinal holes	4
Retinal tears	1
Retinal detachment	1

Amblyopia seen in 10 eyes with high Myopia. Myopic crescent observed in 40 cases with High myopia and pathological myopia. Posterior Vitreous detachment observed in 3 cases. Posterior Staphyloma seen in 6 cases. Foster Fuch Spots noted in 5 cases. Lattice Degeneration is seen in 12 cases. Lacquer cracks observed in 3 cases with pathological Myopia. White without Pressure is seen in 12 cases . Paving Stone Degeneration is observed in 4 cases . Chorioretinal degeneration is seen in 26 cases . Retinal Detachment is observed in 1 case.

III. DISCUSSION

The High myopia or pathological myopia is associated with globe elongation and a refractive error of at least -6 diopters (D) and axial length of greater than 25.5 mm. Excessive axial elongation of the globe in high myopia can cause mechanical stretching and thinning of the choroid and retinal pigment epithelium layers, resulting in various retinal degenerative changes.The peripheral retina is prone for various degenerations secondary to its anatomical dehiscences like thinning, presence of poorly developed retinal cells and absence of large blood vessels etc. Its less resistance to traction in the presence of degeneration makes it vulnerable to retinal detachment.In a cross-sectional community-based epidemiological study in Hong Kong[8], 56.1% and 11.3% of subjects with high myopia were found to have one or more peripheral retinal degenerative lesion or posterior pole lesion respectively.

In the present study, degenerative changes in vitreous were observed in 38 cases and, temporal crescents were also the most commonly seen in 40 cases. There was also shallow cupping of the disc. These changes were probably due to elongation of the globe.

In the present study, Chorioretinal degeneration is noticed in 26 eyes with high and pathological myopia. The association of Chorioretinal degeneration with high myopia is increasingly seen with increasing axial length and myopic power of the eye ball. This finding correlates with a study conducted by Curtin BJ & Karlin DB in 1971.[9]

Lacquer cracks are spontaneous ruptures in the Bruch's membrane predisposing patients with high myopia to develop sudden visual loss as macular choroidal neovascularisation may develop near the lacquer cracks. Small ingrowth of fibrovascular tissue may also give rise to small elevated pigmented circular lesions and are known as Fuchs' spots.

In this study, lacquer cracks are seen in 3 cases with an axial length of 27.50 mm and more with high myopia. This finding correlates with the study of Curtin BJ and Karlin DB[9] in 1971 who showed that lacquer cracks are usually seen in eyes with axial diameter of more than 26.50 mm in high myopia.

A study was done by Jose. M. Celorio et al. [10] showed that out of 218 patients with myopia of 6D or more, 72 [33%] had lattice degeneration. In the present study, lattice degeneration is seen in 12 cases. Increasing prevalence of lattice degeneration is seen in persons with an increase in axial length of the eye ball, and it is more frequently seen in temporal half of retina.

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.Lattice degeneration is more commonly seen in the superior-temporal quadrant. This is probably due to excessive stretching and increased vascularity of this area.

It was reported by O Malley PF et al.[11] 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. In the present study, it is seen in 4 cases with pathologic myopia. It is seen in eyes with an axial length of more than 25mm.

As per the study conducted by Manoj Shukla et al. on white with pressure and white without pressure lesions, white with pressure was seen in 27.6% of myopic eyes. In the present study white without pressure areas are seen in 15 eyes (7.6%) with high and pathological myopia. It is observed in the inferior temporal quadrant. It is seen in areas of lattice degeneration and small retinal breaks.In the present study,12 cases seen with posterior staphyloma?

IV. CONCLUSION

A study of 50 cases of myopia was done. The majority of cases of myopia were observed in the age group of the second decade. By gender, the male preponderance is seen in the distribution of high myopia. Fundal changes in myopia were observed to increase as the degree of refractive error increased. Temporal crescent was the commonest type of myopic crescent observed. It is well documented that myopes, especially high and pathological myopes, tend to suffer from compromised quality of life owing to various influences from functional, psychological, cosmetic, and financial factors. Individuals with high myopia were reported to have a significantly lower vision-related quality of life than those with none, mild, or moderate myopes. All cases have to be examined with due importance to dilated fundus examination so that timely care is given and to enhance the quality of life of such patients.

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