

## Observational study of peripheral retinal degenerations in normal population in Sarojini Devi eye hospital.

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### Abstract:

The study of retinal periphery has a significance in clinical evaluation of an eye. By virtue of its peculiar characteristics it is prone for certain lesions, and some of them could be pathological. The study by various workers indicates the varied type of pathological lesions residing in the retinal periphery. Various lesions found in this region in supposedly normal persons like paving stone degeneration, Lattice degeneration, cystoid degeneration, white with pressure and white without pressure areas are likely to be missed by routine examination. unless specifically looked for

**Keywords:** lattice degeneration, paving stone degeneration, white with and without pressure.

### 1. Introduction

Retinal periphery with its poor blood supply and being constantly associated with vitreous body movements becomes a target to stress and strain. These factors make it an important site to look for certain types of defects.

If the evaluation of retinal periphery becomes a routine part of clinical examination, a significant number of pathological lesions may not be missed.

With this objective an observational study was made to look for these lesions in normal population of various ages and refractive errors.

A study conducted by Manoj Shukla, OP Ahiya on 'Peripheral retina in myopia', in 1983 and concluded that it is strongly advocated that myopic eyes should receive prompt attention from ophthalmologists, as timely prophylactic management of pathological lesions would be very beneficial in the prevention of retinal detachment.

In a study on 'Prevalence and Characteristics of peripheral retinal degenerations in high myopia' by Lam DS, Fan DS, Chan WM, Tam BS in 2005 April, It was cross concluded that high prevalence of peripheral retinal degeneration was found in adult Chinese high myopias. The presence of the holes was positively correlated with very high myopia of the axial length of  $> \text{ or } = 30 \text{ mm}$

A study conducted by Ahmed M. Rasheed and Sajid Y.Shehab in April 2008 to March 2010 to determine the types of peripheral retinal degenerations in highly myopic Iraqi patients- It was a cross-sectional study of 200 patients. He

concluded that most of the patients in the study group had vitreous degeneration followed by lattice degeneration leading to retinal detachment.

In our study involving two hundred and ten patients attending the routine OP of Sarojini Devi eye hospital we could detect certain important lesions by our thorough evaluation of Retina including the periphery.

### 2. Aims and Objectives

To evaluate various types of peripheral retinal degenerations and their incidence in normal population of all ages, sexes and refractive status in patients coming to op department of sarojini devi eye hospital.

### 3. Materials And Methods

This is a prospective observational study that included 210 patients of all ages, sexes and refractive errors, randomly picked up from a general OP of Sarojini Devi Eye Hospital.

A slit lamp examination of anterior segment will be done to rule out gross eye disease followed by fundal evaluation by indirect ophthalmoscopy and examination with 90D for any central lesions of the retina. Peripheral fundus will be thoroughly searched by scleral indentation to look for retinal degeneration. All cases will be subjected to refraction by means of retinoscopy and AR.

SAMPLE SIZE: 210 patients

STUDY PERIOD: 2 years

**INCLUSION CRITERIA:** Normal population of age above 10 years and below 60 years, both sexes, with good fundus view.

**EXCLUSION CRITERIA:** Children below 10 years of age, h/o trauma, ocular surgeries and other ocular diseases.

The cases were divided into 3 groups depending upon refractive state of the eye.

Emmetropia – 10

Hypermetropia – 25

Myopes – 175

The incidence of peripheral retinal degenerations is analysed under different categories as age, sex, refractive errors with different diopters.

#### 4. Observation And Results

**Table 1. Retinal degeneration in total males and female**

Gender	Total	Retinal degeneration	P value
Male	102	13	0.03
Female	108	5	

In this study sample of patients were randomly selected out of which females were more in number (108) than Male patients (102). But incidence of retinal degenerations was observed to be more in Male patients with **P value of 0.03** which is significant.

**Table 2 – Refractive errors with Retinal degeneration**

Refractive Error	Total	Retinal Degeneration	P value
Myopes	175	18	<0.001
Hypermetropes	25	0	
Emmetropes	10	0	

Out of 175 myopes 18 patients were observed to have retinal degenerations with **P value of < 0.001**, which is significant.

This is more towards the fact that incidence of peripheral retinal degenerations is more in myopes compared to other refractive errors

**Table no.3 – Retinal degenerations in different agegroups**

Age Group	Total	Retinal Degeneration	Percentage %
10-19	45	4	8.88
20-29	67	5	7.46
30-39	45	3	6.66
40-49	32	3	9.37
50-59	21	3	14.2

Incidence of peripheral retinal degenerations was found to be more in the age group of 50-59 years, with 14.2%.

**Table 4. Types of Retinal degenerations in males and females**

Types of degenerations	Male	Female	P value
White with pressure	10	2	0.01
White without pressure	2	0	0.1
Lattice degeneration	1	2	0.5
Vitreous condensation	0	1	0.3

Peripheral retinal degenerations were observed to be more in Males than Females out of which White with Pressure degeneration was observed

**Table no. 5 Refractive error and retinal degeneration in percentage**

Refractive Index	White With Pressure	White Without Pressure	Lattice Degeneration	Vitreous degeneration	%
0 – 1 D	0	0	0	0	0
1 – 2 D	0	0	0	0	0
2 – 3 D	2	1	0	0	16.7%
3 – 4 D	5	2	1	1	50%
4 – 5 D	4	1	1	0	33.3%

**Discussion**

In this study 210 patients attending general out patient Department of Sarojini Devi Eye Hospital were studied for peripheral retinal degenerations. The patients selected were simple myopes (<5D), Hypermetropes < 5D and emmetropes without any ocular complications. The lesions which were found to be present in the periphery of the retina were (a) White without pressure (b) white with pressure areas (c) lattice degeneration (d) vitreous condensation.

**(a) White without pressure and white with pressure:**

WATZKE<sup>31</sup> in (1961) clinico pathological study found in over 30% of normal eyes, with a strong tendency to bilaterality. The lesions appeared as a band located between equator and ora and parallel to them. Sometimes ends of the bands are fusiform but many shapes are encountered.

This clinical appearance was first described by SCHEPENN and OKAMURA<sup>33</sup> coined the term. There are also instances where white with pressure merges gradually into an area of white without pressure, the later simply being an exaggeration of the former. It is maximum in the age group of 30-39 years.

In this study white without pressure and white with pressure in the periphery of the retina was seen to be present in 7% of the eyes with myopes <5D and maximum in the age group of 20-29 years.

SCHEPENS, OKAMURA in their study noted that the lesions were bilateral and were

superotemporally located and found more in males than females.

In this study white with pressure lesions most commonly observed in myopes (6.85%) with P-value <0.001 which is significant. Retinal degenerations were noted to be more in males than females, with a P-value of 0.03, which is significant.

**(b) Lattice degeneration:**

STRAATSMA<sup>4</sup> et al and RUTNIN<sup>2,3</sup> et al, who observed it to be present in 6% of the cases.

OKUN<sup>12</sup> histologically noted the lesion in 1.25% of the cases. CAMBIAGGI<sup>34</sup> et al reported the lattice degeneration in 4.48% of the normal eyes and 19.1% in myopic eyes. BAYER<sup>24, 25</sup> noted an incidence of 7.1 of the cases.

HALPERN<sup>35</sup> found it in 5% of the cases. In their clinical study, RUTNIN and SCHEPENS<sup>3</sup> observed an incidence of 3.9%. In this study lattice degeneration was noted in 1.5% of the myopic eyes with refractive error of <5D and found in age group between 30-60 years, slightly more in females than males.

The incidence of the lesion was maximum in the age group of 20-29 years in this study. This is in contrast to the findings of BAYER who observed the greatest incidence in the age group of 10-19 years.

The lesions were located in the equatorial region, there was a significant prevalence of lattice degeneration in the upper temporal quadrant, where it was present in 84.61% of the eyes, this corresponds with the findings of RUTININ et al, who found 82% in the upper temporal quadrant.

BAYER<sup>25</sup> observed in to occur more at around the 6 o clock and 12 o clock meridians. Out of the groups which were made according to the refractive state of the eye maximum number of the lesion were encountered in myopes (6.85%). The lesion was significantly low in hypermetropes (0%).

BAYER observed a slight but definite shift towards myopia in the eyes which had lattice degeneration, the lesions were observed to be more common in males than females, the incidence being (22.2 %) and (8.33 %) respectively.

BAYER observed no significant difference in the involvement of either sex. This lesion of the lattice degeneration was bi/ uni lateral of the cases.

**(c) Vitreous condensation:**

Was seen in one case which was bilateral. It was seen in a female myope between 30-39 years of age. In this study occurrence of peripheral retinal degenerations was found to be in more myopes of refractive error  $<5D$ , which is relevant with the studies made by Manoj Shukla<sup>36</sup> and Lam Ds

### SUMMARY

Periphery of the retina was studied in 420 eyes, of which 350 eyes were myopes, 50 hypermetropes and 20 were emmetropes. Various lesions observed are analysed Age and sex wise. Of the total number of cases it was observed that the percentage in the eyes showing lesions were more in 20-29 years of age in my study. Amongst the lesions encountered in the periphery of the retina are:

White with pressure and white without pressure—was the commonest (5.71% and), it is more common in myopes (6.85%), in age group 20-29 years, most commonly seen in superotemporal quadrant (72.2%), majority are bilateral, more common in males.

Lattice degeneration: was seen in 3 persons (6 eyes) of which 2 were females and 1 was male out of 175 myopes. This was bilateral in (1.42%) of the eyes. Superotemporal quadrant is most commonly involved (1.71%). The lesions were significantly more in myopes (1.7%).

Vitreous condensation: was seen in one female (2 eyes) of 30-39 years age group, she was a myope, lesion was bilateral and in superotemporal quadrant.

### Conclusion

Peripheral retinal degenerations are common lesions involving the peripheral retina but most of them are clinically innocuous. But some of the lesions like lattice degeneration can result in retinal breaks and may further result in rhegmatogenous retinal detachment<sup>38</sup>. Therefore these lesions have been considered for prophylactic treatment.

Most of the peripheral retinal degenerations may not require treatment, except in rare and high risk situations. Adequate laser photocoagulation is recommended in high risk cases.

So every case particularly Myopes, be it simple ( $<5D$ ) or high myopes ( $>5D$ , pathological), should be thoroughly examined with indirect ophthalmoscopy to identify peripheral lesions, so that further complications can be prevented and vision can be preserved.

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