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Histomorphological spectrum of ophthalmic lesions in a Rural Tertiary Centre.

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ABSTRACT: Ophthalmic pathology is unique in many respects as it encompasses wide range of tissues like epithelia , connective tissue and specialised tissue. It shows wide range of infections and neoplasms.

Aims & Objectives: This study aims to evaluate the histomorphological spectrum of ophthalmic lesion in Rural medical college , Loni. Also helps in learning various pathologies of ophthalmic lesions ranging from trauma ,degenerative, inflammatory and neoplastic conditions that can affect the components of orbicular system.

Material & Methods: A retrospective review of slides and paraffin embedded blocks of all ophthalmic specimens reviewed over a period of 5 year at histopathology department of our institute is done. Clinical data including age, sex, site of lesion and clinical summary were extracted from histopathology requisition form.

Results & Conclusions: Total 684 cases were studied over a period of 5 years from January 2015 to December 2019. Majority of cases were presented during 6th to 7th decade of life. Lacrimal gland was the commonest site of lesion affecting 42% followed by conjunctiva in 37% followed by eyelid 8% and cornea in 5.4%. Inflammatory lesions were the commonest (49.7%) followed by degenerative (41.8%) and benign(5%) and then malignant(3.5%) . Among Benign, Nevus was the predominant lesion(1.9%) . Among the malignant lesion Squamous cell carcinoma (1.5%) was the predominant lesion. Eye is a vital organ for vision. Study shows that different geographic areas have predilection for different ophthalmic lesion. Thus more studies are needed to know geographical pattern of ophthalmic diseases

Keywords- Ocular, Nevus , Squamous cell carcinoma

I. INTRODUCTION:

The eye is a unique special organ exhibiting diverse histologic structures. It is very important to have knowledge of normal ocular anatomy and spectrum of pathologic changes that involve these structures . These lesions are very rare and often complicates the recognition of their fine and sometimes subtle presentation. Clinical Signs and Symptoms of malignant ocular lesions simulate commonly benign conditions which pose difficulties for both clinicians and ever experienced pathologists.There is variation in pattern and frequency on the basis of geographical lesions[1].Ophthalmic pathology is a subspecialty of cellular pathology which deals with the diagnosis and characterization of eye diseases[2].Ophthalmic pathologists study tissues excised by ophthalmologists through evisceration and enucleation and other ophthalmic biopsies[3].The orbit contains the globe, extra ocular muscles, fat, vascular, nerve, glandular and connective tissues of neuroectodermal origin[4].The neoplastic lesions of orbit show variety of range of pathological findings which are further complicated by patient's fear of loss of vision , which is a great challenge to the opthalmologist[5].Ophthalmic pathology is unique in many aspects as it encompasses a broad range of tissue epithelia, connective tissue and other specialized tissues. Its shows a broad range of pathologies comprising of infections and neoplasia and many neoplastic conditions mimic other nonneoplastic or inflammatory conditions[6]. Proper management of patients depends mainly on the histopathological diagnosis without which only clinical diagnosis can misguide the treatment.The knowledge of spectrum of ophthalmic lesions would be helpful to the ophthalmologists in shaping the strategy for diagnosis and management of ophthalmic lesions in this region[7].In a study done by Yashita Gupta, Renuka Gahine, Nighat Hussain,and Mohd JafarMemon in 2017, the non-neoplastic, benign and malignant lesions were 61.1%, 7.8% and 31.1% respectively. Retinoblastoma formed 40.1% of all malignant lesions followed by sebaceous carcinoma (19.1%) and Squamous Cell Carcinoma (SCC) (10.5%)

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This study primarily helps us to study and know the frequency of various histopathological patterns of orbitoocular specimens sent to the pathologist in a tertiary health care centre in rural area.

AIMS AND OBJECTIVES

- To evaluate the frequency of ophthalmic lesions in a tertiary health care center in rural area.
- To study various pathologies of ophthalmic lesions ranging from trauma , degenerative , inflammatory and Neoplastic conditions that can affect the components of orbito-ocular system.

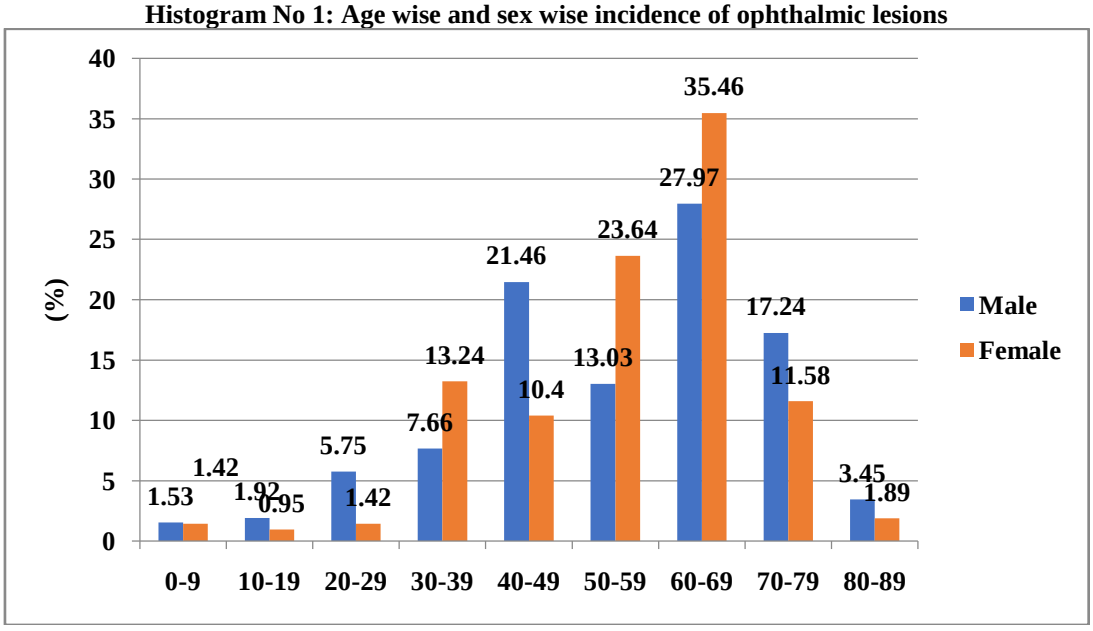
II. MATERIALS AND METHODS

- It was a retrospective cross sectional study.
- Data involving ophthalmic biopsies were evaluated retrospectively from January 2015 to December 2019 in the department of Pathology of our institute
- Total 684 biopsies and specimens were received from both inpatient and outpatient department of our institute
- The tissues were fixed, processed and stained with Haematoxylin and Eosin stain and further ancillary studies were used as per required.
- Immunohistochemistry (IHC) and special stains like Periodic acid-Schiff (PAS) and silver stains were performed in difficult and rare cases for definitive diagnosis.
- Histomorphological diagnosis was made and evaluated as per epidemiological and clinicopathological data.

III. RESULTS

684 cases of Ophthalmic lesions were observed..97% in males and 35.46% in females.Sex Ratio obtained was 1:1.62. Male and female preponderance both were seen in 6th -7th decade. (27.97% in males and 35.46% in females.)

Histogram No 1: Age wise and sex wise incidence of ophthalmic lesions



Piechart No-1 : Male and Female Ratio

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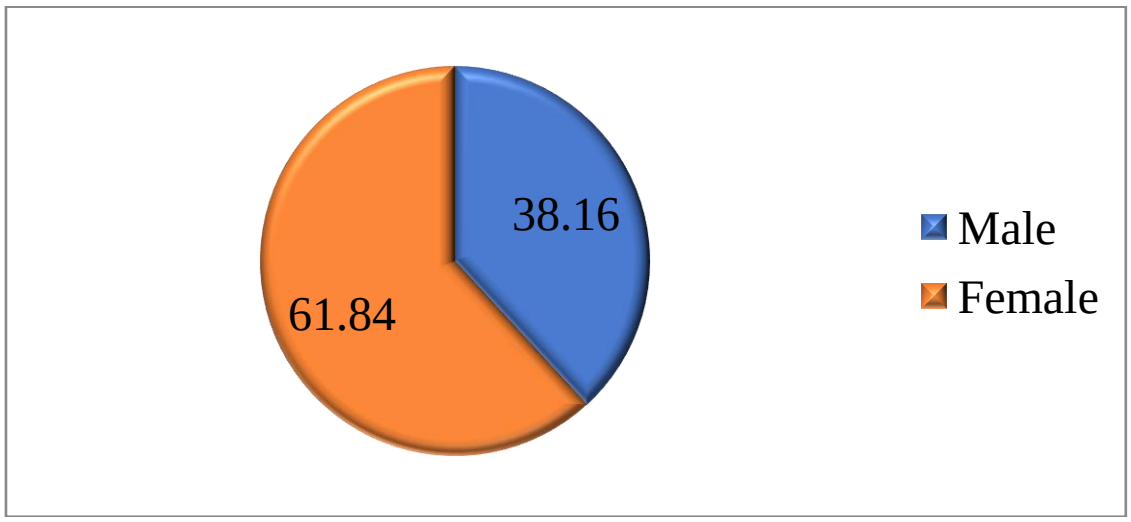

Table No: 1 Location wise distribution of lesions

Location	Cases	%
Lacrimal sac	289	42.25
conjunctiva	254	37.13
cornea	37	5.41
limbus	8	1.17
eyelid	57	8.33
retina	1	0.15
lens	25	3.65
Orbit	13	1.9
total	684	100

Pie chart No 2: Location wise distribution of lesions

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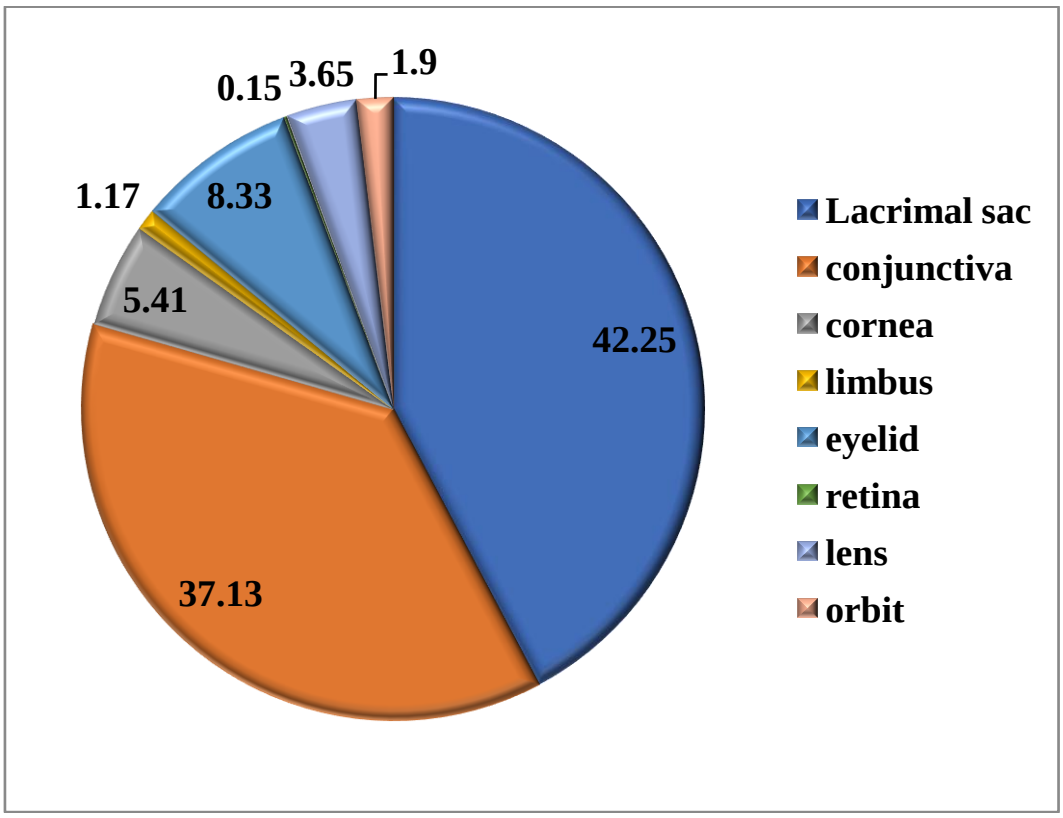
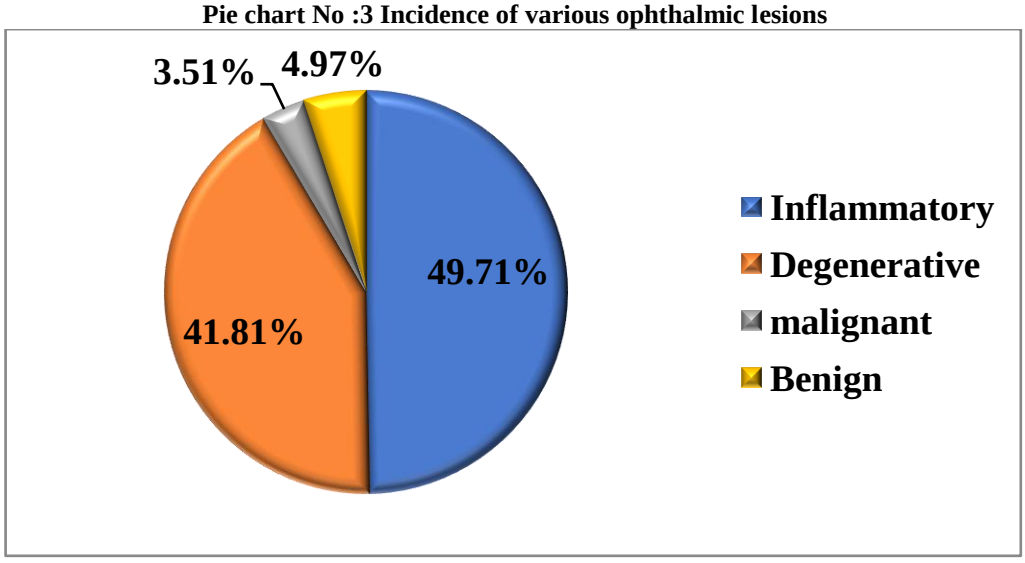


Location wise distribution of lesions were also done Both Table No: 1 and Pie chart No 2 shows that majority of the lesions were of the lacrimal sac(42.25%) followed by conjunctiva(37.13%) eyelid (8.33%) followed by cornea, lens, orbit and retina

Pie chart No :3 Incidence of various ophthalmic lesions



Pie chart No 3 shows that out of 684 cases Inflammatory lesions formed a majority(49.71%) followed by degenerative lesions(41.81%) followed by Benign(4.97%) and Malignant(3.51%).

Among all the lesions, Inflammatory lesions(41.18%) were seen most commonly in the 6^{th} to 7^{th} decade. Degenerative lesions(24.48%) were seen most commonly in the 5^{th} to the 6^{th} decade. Benign lesions(29.41%) were also most

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commonly seen in 6th-7th decade. Malignant lesions (33.33%) were seen mostly in 5th to 6th decade

Table No 3: Distribution of various Inflammatory ophthalmic lesions

Nature of lesion	HP Diagnosis	No of cases	percentage
Inflammatory	Chronic dacrocyctitis	300	88.24%
	Keratitis	16	4.71%
	Panopthalmitis	6	1.76%
	endopthalmitis	2	0.59%
	Corneal abscess	3	0.88%
	IGT	2	0.59%
	Chalazion	3	0.88%
	Foreign body granuloma	4	1.18%
	Staphyloma	2	0.59%
	Molluscum contagiosum	2	0.59%
TOTAL		340	100%

Table No 3: shows that out of 340 Inflammatory lesions, chronic dacyrocystitis formed a majority(88.24%) followed by Keratitis(4.71%) followed by Panopthalmitis(1.76%) followed by foreign body Granuloma(1.18%) followed by corneal abscess, chalazion (0.88%) followed by Staphyloma, Molluscum contagiosum and Inflammatory Granulation tissue (0.59%)

Histogram No 2: Distribution of inflammatory ophthalmic lesions.

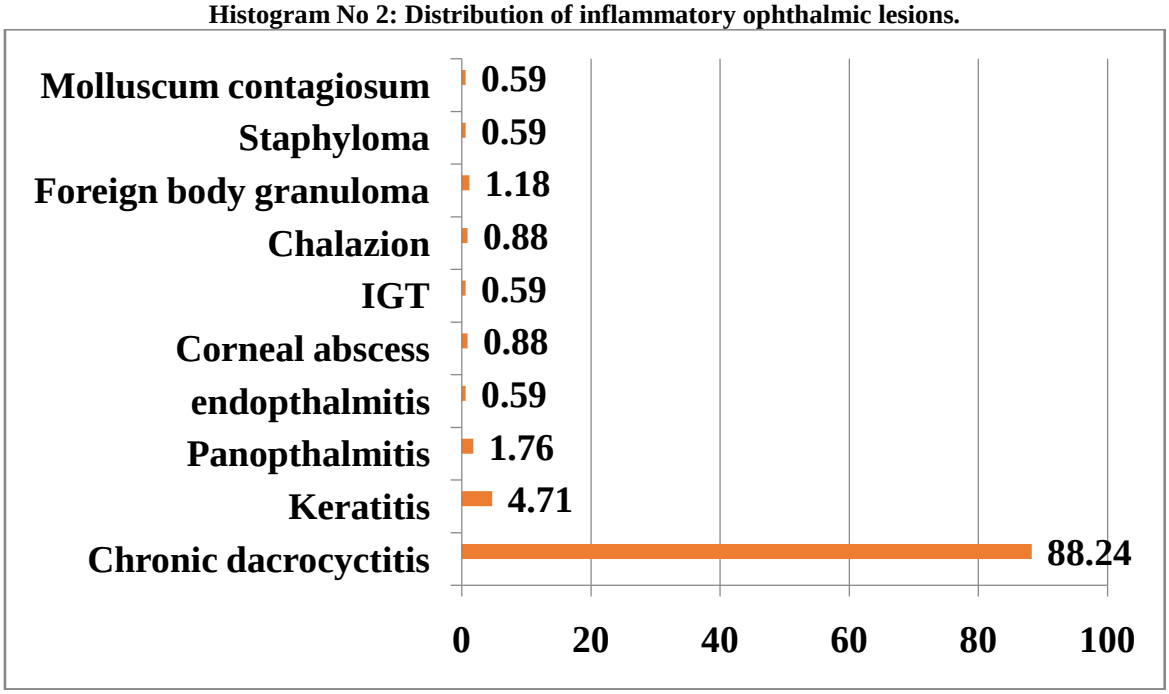

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Table No 4: Distribution of Degenerative ophthalmic lesions

Nature of lesion	HP Diagnosis	No of cases	percentage
Degenerative	Pterygium	257	89.86%
	Non-spglobular degeneration	4	1.4%
	Cataract lens	25	8.74%
TOTAL		286	100%

Histogram No 3 : Distribution of degenerative lesions

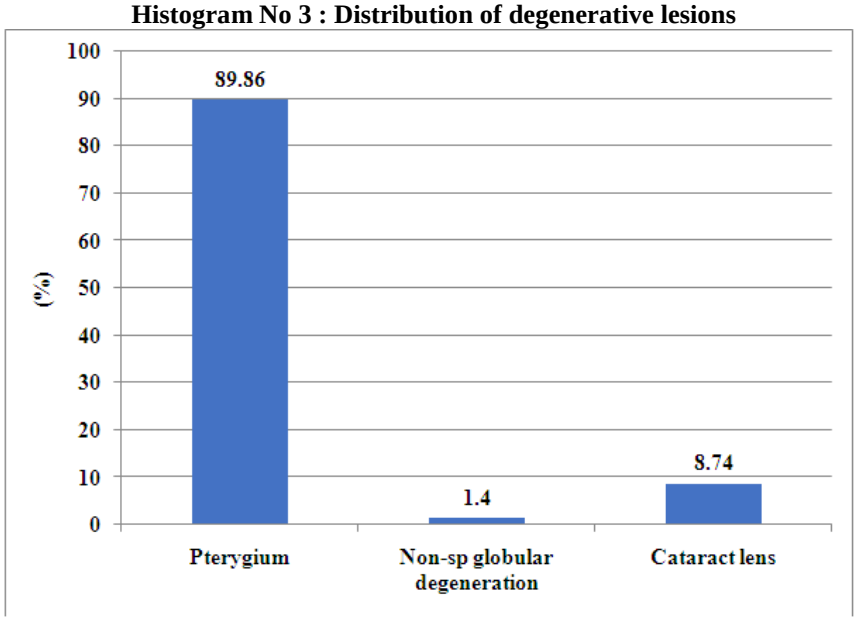

Table No 4 and Histogram No 3 shows that out of 286 degenerative lesions, 257 are of Pterygium (89.86%) followed by 25 cases of cataract (8.74%) and 4 cases of Non specific degenerative lesions(1.4%)

Table No 5: Distribution of Benign Opthalmic lesions

Nature of lesion	HP diagnosis	No of cases	percentage
benign	Keratinous cyst	8	23.53%
	Nevus	13	38.24%
	Sebaceous cyst	1	2.94%
	Hemangioma	6	17.65%
	Adenoma	1	2.94%
	Squamous papilloma	3	8.82%
	Dermoid cyst	2	5.88%
TOTAL		34	100%

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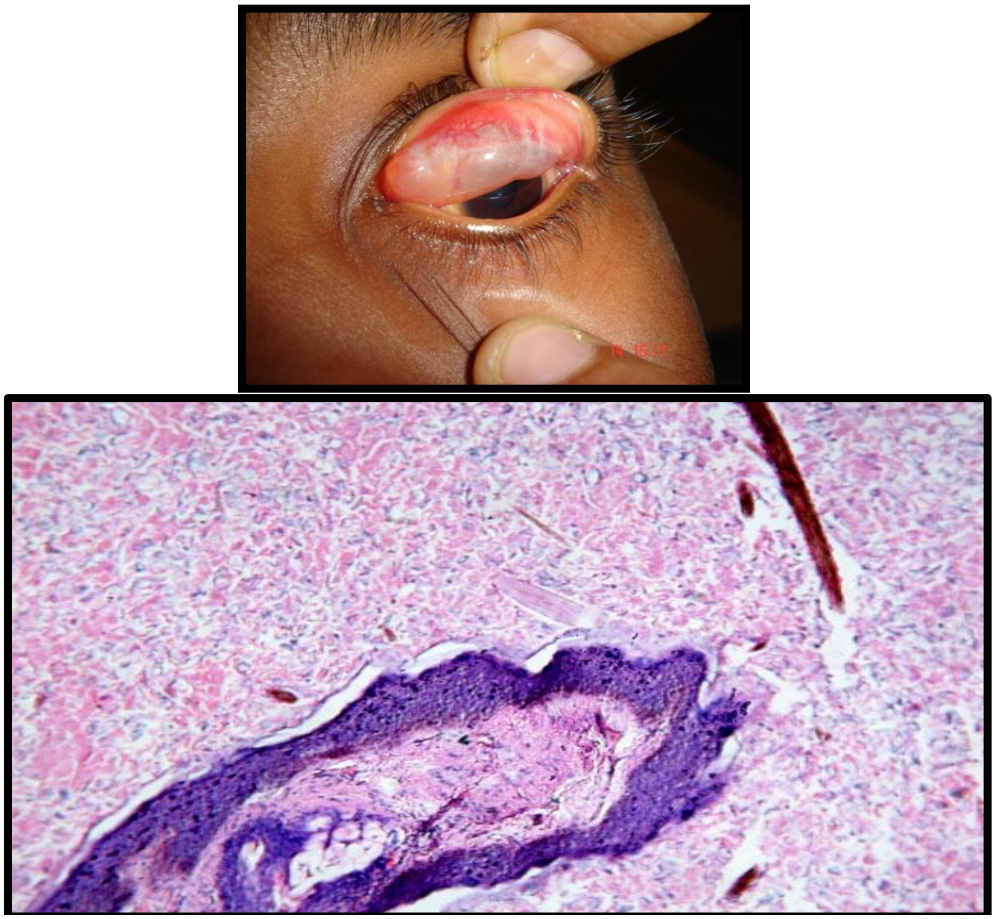
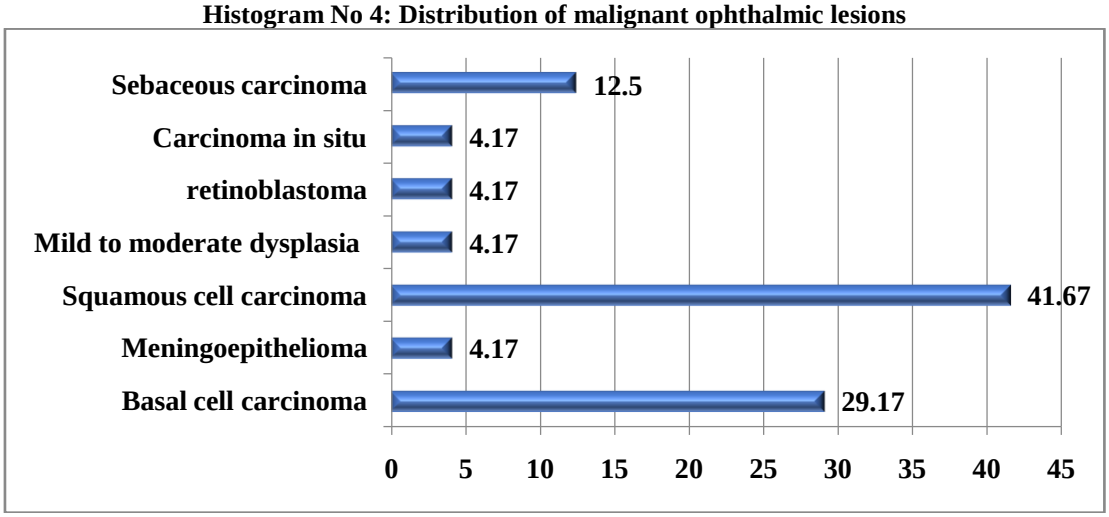


Figure No1: shows Trichilemmal cyst wall showing abrupt keratinization with anucleate squames and hair shafts in the lumen, H&E, LP

Table No 5 shows that out of 34 benign cases 13 cases are Nevus(38.24%), 8 cases are keratinous cyst(23.53%), 6 cases are Hemangioma(17.65%) 3 cases are Squamous Papilloma(8.82%) 2 cases of dermoid cyst(5.88%) and 1 case each of Sebaceous cyst and Adenoma(2.94%)

Histogram No 4: Distribution of malignant ophthalmic lesions



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Histogram no4 shows that out of 24 malignant lesions the majority were squamous cell carcinoma(41.67%) followed by Basal cell carcinoma (29.17%) followed by Sebaceous carcinoma(12.5%) followed by Retinoblastoma and Carcinoma in situ (4.17%)

IV. DISCUSSION:

Biopsy specimens received in the histopathology section of Department of pathology were from the rural area, Data obtained is not an absolute representation, but can be considered as a distribution of ophthalmic lesions in the rural regions of our country.

Present study showed that ophthalmic lesions were highest in the 6th to 7th decade due to lower socio-economic status, landless laborers and lower age groups. This finding was in contradiction to the study done by Yashita Gupta[7] et al in her study Clinico-Pathological Spectrum of Ophthalmic Lesions in 2017 where they found that ophthalmic lesions(23.6%) were highest in 0-9 years of age group due to increased incidence of rhinosporoidosis and retinoblastoma in this age group. In a study done by Chauhan SC et al. majority of the cases were reported in 31-40 years of age group.

Sex ratio obtained was 1:1.62 in the present study. Male and female preponderance both were seen in 6th -7th decade. (27.97% in males and 35.46% in females). In a study done by Yashita Gupta[7] et al. there was not much sex difference as lesions were found in 50.4% males and 49.6% females. MM Singhet al.in his study 'A study of ocular morbidity among elderly population in a rural area of central India' in 1997, the ocular diseases were found to be more prevalent among males (89.1%) than females (79.9%)[8].

In the present study Lacrimal sac (42.25%) was the most commonly involved site . This is because of chronic Dacryocystitis involving the lacrimal sac comprised the majority in our study. In a study done by Yashita Gupta et al eyelid (33.36%) was the most commonly involved site followed by Lacrimal sac(2.9%).

In our study incontrast to other studies the incidence of non-neoplastic lesions formed a majority as compared to the neoplastic lesions because Chronic Dacyrocystitis , Pterygium formed a majority of all the ophthalmic lesions due to due to increasing degenerative conditions, increased susceptibility to infections, lack of proper care of the eyes in the people residing in rural population[8]

In the present study among the benign ophthalmic lesions Nevus(38.24%) was the most commonest lesion followed by Keratinous cyst (23.53%). Frequency of these lesions can be attributed to outdoor occupations in rural populations.

This finding was supported by a study done by Anju Kochar, Arif Khan, Nabab Ali Khanin their study 'Clinical profile of ocular surface tumours at a tertiary care centre' in 2020 found that the most common ocular surface neoplasia was Nevus(39.a25%)[9.] Similar findings wereseen in study done by Obata H, Aoki Y, Kubota S, Kanai N, Tsuru Twho found that intradermal nevus was the most commonest lesion

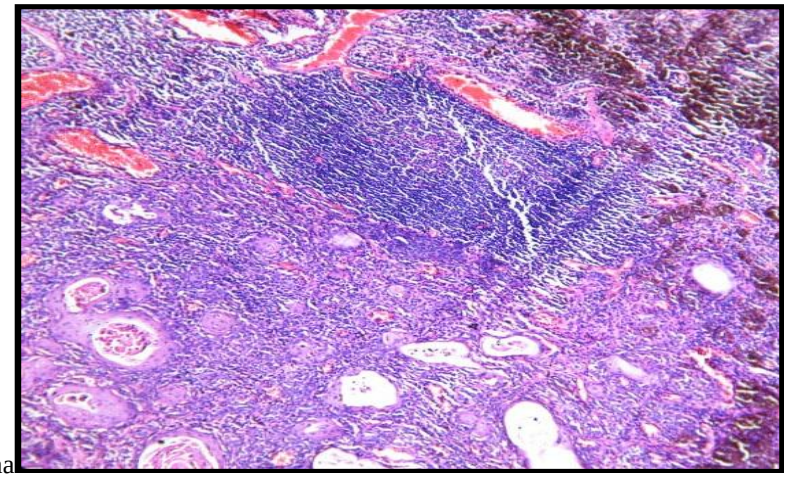
aa 

Figure No 2: Benign conjunctival nevus showing melanin laden cells, squamous nests, increased vascularity and focal lymphoid aggregates.

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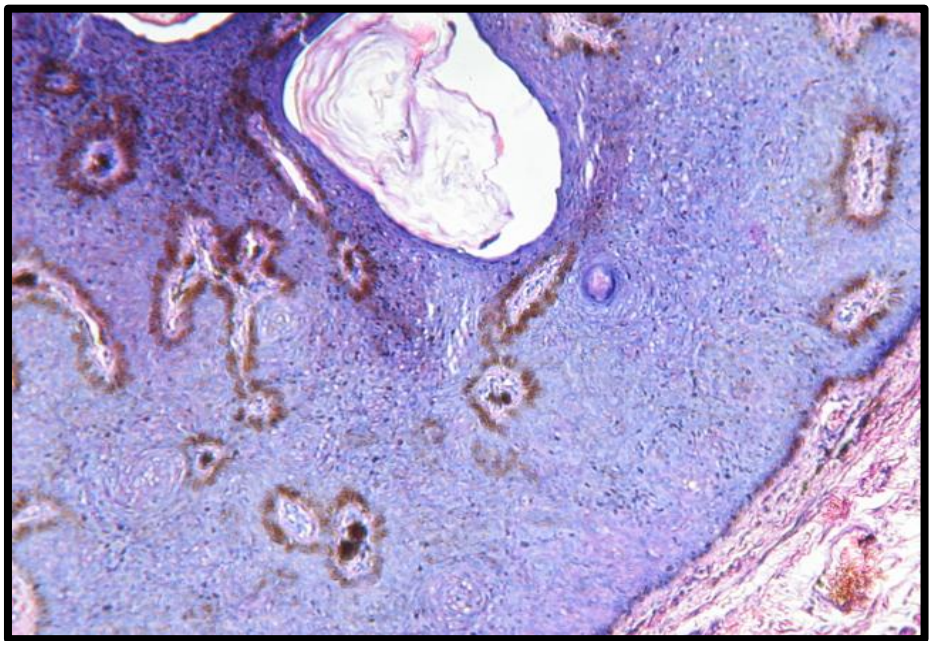

Figure No 3: Benign epidermal Nevus showing melanin laden cells and keratinous cysts.

In the present study out of 24 cases of malignant ophthalmic lesions , Squamous cell carcinoma formed a majority 41.67% followed by basal cell carcinoma (29.71%) followed by Sebaceous Carcinoma12.5%) followed by retinoblastoma and others. Squamous cell carcinoma formed a majority as in our study the population was rural and Farmers had the highest prevalence of squamous neoplasia as they are more prone to exposure of risk factors (sun light UV rays and HIV). This finding was supported by Anju Kochar[9] et al in their study found that most common malignant tumour was ocular surface neoplasia (20.56%). Similar finding was also observed in series from Nepal[11].SCC was the commonest (66.1%) supported by a study in Sudan[12].which also ashowed it as the commonest tumour with 50.4% cases

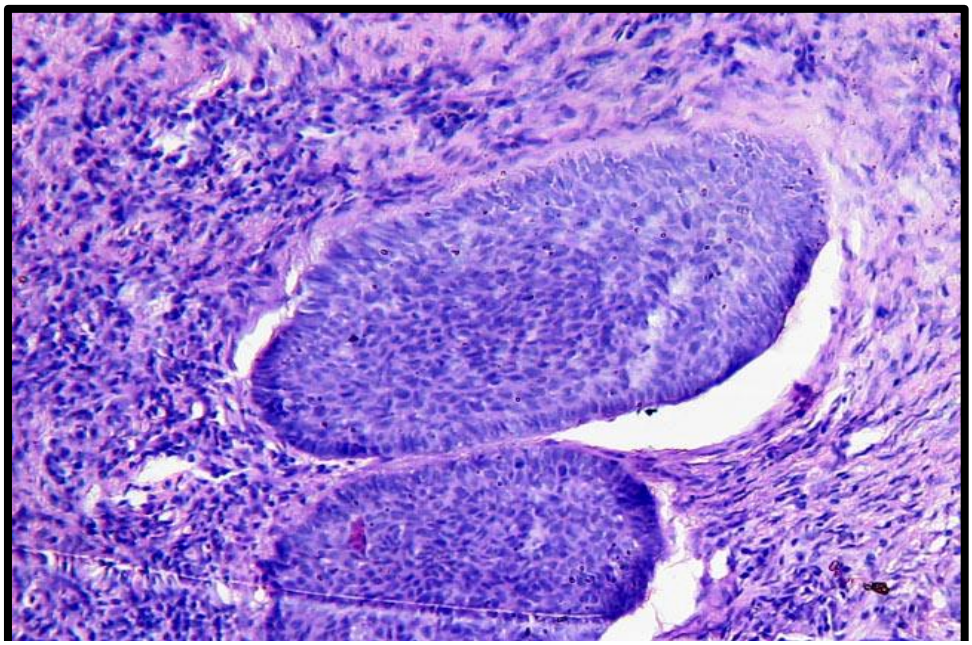

Figure no 4 Nests of basaloid cells in Basal cell carcinoma.

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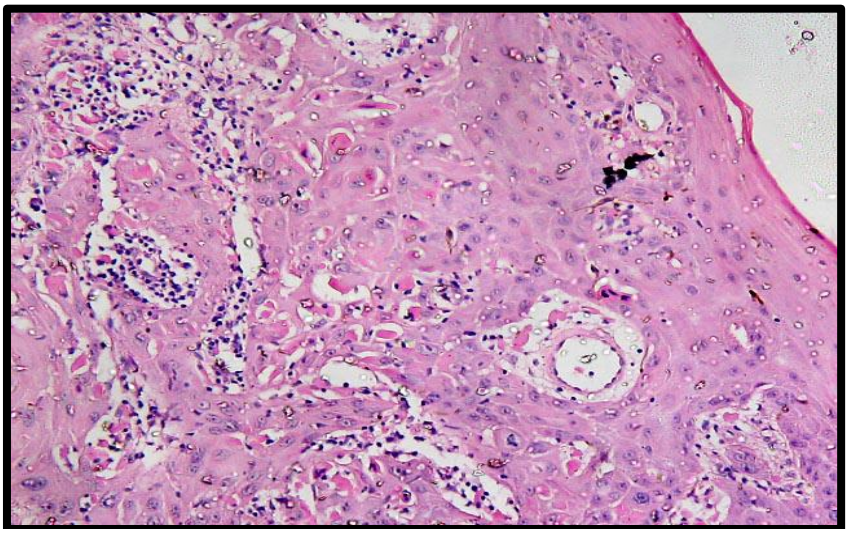

Figure no 5 Squamous nests of cells invading into the stroma, H&E, LP

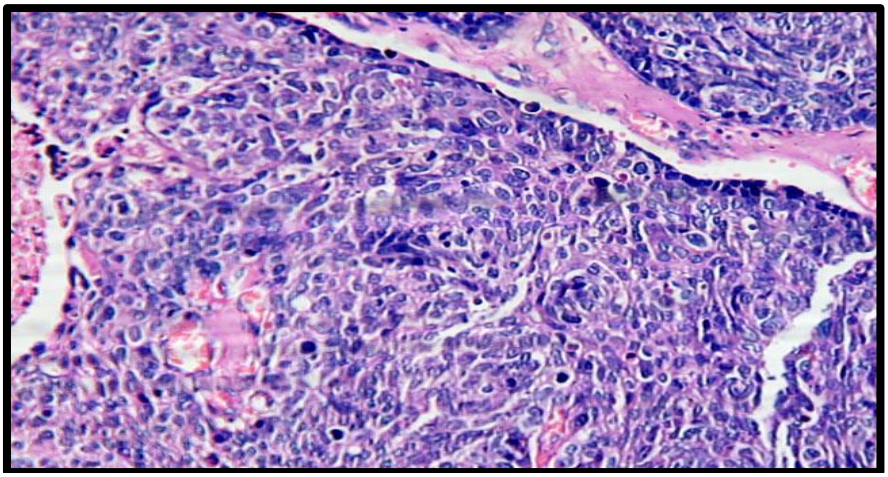

Figure no6: Cells with clear cytoplasm and vesicular nuclei in a sebaceous carcinoma, H&E, LP

A low percentage of malignant ophthalmic lesions are seen in paediatric age group(12.25%) and only one case of retinoblastomas was seen (4.17%) which was supported by study done done in Nepal (6.7%).This was due to decreased awareness among the rural population which led to delayed diagnosis.

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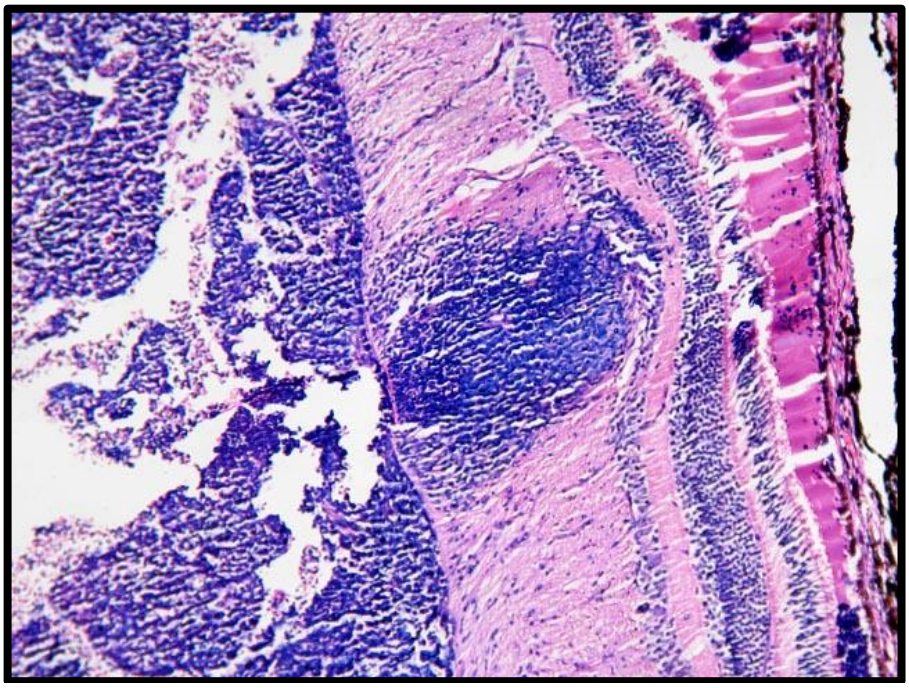

Figure no 7 Retinoblastoma arising from retina and involving the intraocular region, H&E, LP

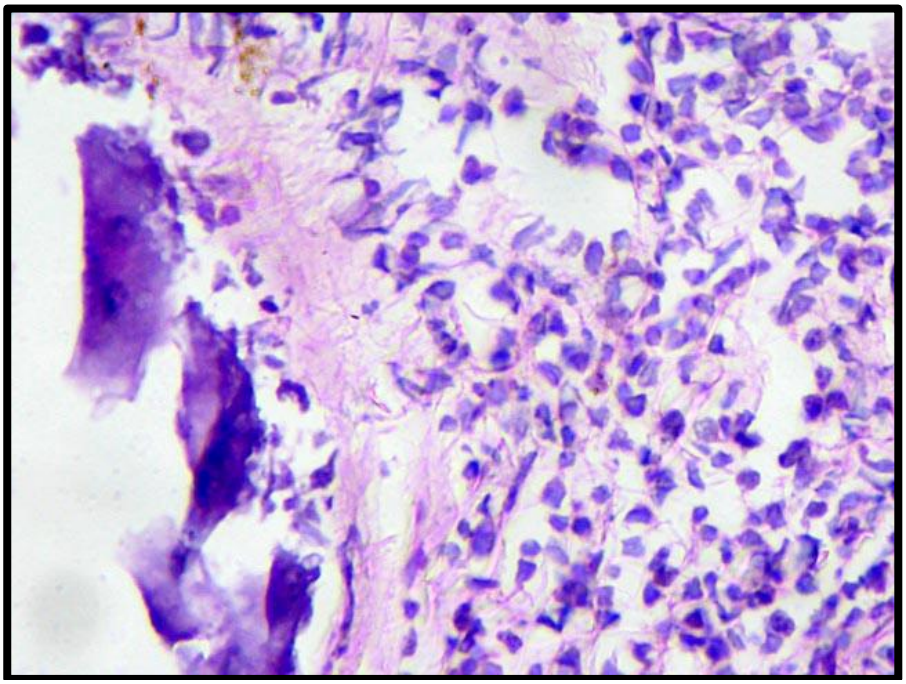

Figure No 7 : Calcification seen adjacent to small, round cells arranged in rosettes in a retinoblastoma, H&E, HP

V. LIMITATIONS:

This study doesnot give a proper distribution of ophthalmic lesions in our country as only those cases were selected which were sent as biopsy specimens in our histopathology Department. Hence more studies should be done to get a proper geographical distribution of ophthalmic lesions.

VI. CONCLUSION

Among the inflammatory lesions Chronic dacrocystitis formed a majority, among the benign lesions Nevus was the most predominant lesion, and among the malignant lesion Squamous cell

carcinoma was the most predominant lesion. All surgically excised ophthalmic lesions must be subjected to histopathological examination without fail to provide a definitive diagnosis, continued patient care and management.

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