ABSTRACT

Introduction: Ophthalmic pathology is a subspecialty of histopathology that deals with diagnosing and characterising eye diseases. Ophthalmic pathologists study tissues excised by ophthalmologists through evisceration, enucleation and other small biopsies. Ophthalmic lesions include a wide spectrum of benign, premalignant to malignant lesions. The diagnosis of these lesions is based on clinical and histopathological features. Aim: This study was conducted to evaluate the histomorphological and clinicopathological spectrum of ophthalmic lesions at a tertiary care hospital.

Materials and Methods: A prospective observational study was carried out in the Department of Pathology from January 2018 to September 2018. A total of 40 specimens of the orbito-ocular region were obtained from in-ward patients of the ophthalmology department. These were studied as per epidemiological and histomorphological data.

Results: We studied a total of 40 histopathological specimens in the age group of 2 years to 82 years with a bimodal distribution. The male to female ratio was 2:1. Around 27.5% of lesions were seen in <20 years of age. Clinical diagnosis was not consistent with histopathological diagnosis in approximately 17.5% of cases. The non-neoplastic, benign, pre-malignant (OSSN), malignant lesions were 52.5%, 20%, 10%, 17.5% respectively. Retinoblastoma (2 cases) and Uveal choroidal malignant melanoma (2 cases) formed 25% of all malignant lesions each, followed by Adenoid cystic carcinoma (1 case), Squamous Cell Carcinoma (SSC) (1 case) and Sebaceous carcinoma (1 case).

Conclusion: 1) OSSN is a low-grade malignancy with an overall good prognosis. The most common prognostic factor is the presence of neoplastic cells in the margin; hence an early diagnosis by histopathology can prevent a recurrence. 2) 17.5% of cases do not show a clinicohistopathological correlation. This suggests that histopathology is still the gold standard for the diagnosis of ocular lesions.

KEYWORDS Evisceration, Enucleation, Squamous Cell carcinoma, Retinoblastoma

Introduction

Histopathology remains the mainstay of diagnosis in tumoral growths.[1-5] In addition to determining the malignant potential of the lesion, histology reveals its exact nature and structure.
obtained from in-ward patients of the ophthalmology department.
• These were studied as per epidemiological and histomorphological data.

Results

We studied a total of 40 histopathological specimens in the age group of 2 years to 82 years with a bimodal distribution. The mean age was 30.9 +/- 14.5 SD (years), while the age range was 2–82 years. The highest frequency of cases was seen in the 10–20 years age group with 7 cases, while there were 6 cases in the 21–30 and 61-70 years age group. Other age groups and their frequencies are shown in Figure 1. The overall mean age was 30.9 +/- 14.5 SD (years) while the age range was 2–82 years. The highest frequency of cases was seen in the 10–20 years age group with 7 cases, while there were 6 cases in the 21–30 and 61-70 years age group.

![Figure 1 AGE WISE DISTRIBUTION OF CASES](image)

The male to female ratio was 2:1. The mean age of cases of squamous cell carcinoma (SCC) is SD (years). The age range for SCC is 38-71 years. The mean age of carcinoma in situ is 35.8 +/- 11.5 SD years. The age range was 24–60 years. There were 4 cases of Ocular Surface Squamous Neoplasia (OSSN), with males accounting for 3 cases (%) and females accounting for 1 case (%) (male-to-female ratio of 3:1). Pterygium was found in 2 cases (%). Twelve cases were inflammatory lesions. Retinoblastoma, Uveal Choroidal Malignant Melanoma, Sebaceous Cell Carcinoma accounts for 2 cases each. Moreover, benign cysts accounted for 2 cases each. Adenoid cystic carcinoma, Intradermal Neavus, Compound Neavus, Schwannoma, And Neurofibroma all accounted for one case.

![Figure 2 TYPES OF LESIONS](image)

Among the malignant ophthalmic lesions, retinoblastoma (28.5%), Uveal choroidal melanoma (28.5%), sebaceous carcinoma (14.28%) and SCC (14.28%) were the three most common tumours. In series by Ud-Din N et al., from Pakistan, retinoblastoma was the commonest (24.5%), followed by SCC of the conjunctiva (21.5%) and basal cell carcinoma (15.8%)[12].

A high percentage of malignant ophthalmic lesions were observed in the paediatric age group due to retinoblastoma, constituting 28.5% of all malignant ophthalmic lesions. However, our findings were closer to those reported by other studies, 31.7% and 32%, respectively [17,18]. Thus, like in other studies, the most common malignancy in children in the present study was retinoblastoma.

However, some other studies have reported lower values, 20.8% and 19.8%, respectively [16,20]. It was still lower (6.7%) in series from Nepal [1]. The average age of retinoblastoma was 4 years with an equal male to female ratio. Studies were done in Pakistan and India also reported the same age distribution but with male predominance, while in Western countries, the age of presentation is earlier. This earlier age of presentation in developed countries is probably due to better diagnostic facilities and increased awareness among the public, which is lacking in our continent.

As the histopathology section of the Department of Pathology receives biopsy specimens from the whole region, urban as well as rural, the data from this institute, although not an absolute representation, may still be considered a fair indicator of trends in the distribution of ophthalmic lesions and may be taken as representative of this part of the country. The present study found that ophthalmic lesions were highest (17.5%) in the 10-20 year age group. However, in a study by Chauhan SC et al., the majority of the cases were reported in the 31-40 year age group [2]. This may be due to the increased prevalence of rhinosporidiosis and retinoblastoma in this region.

Gender wise distribution was found in 67.5% males and 32.5% females. Nevertheless, in the paediatric age group, most were males (66.6%).

Regarding sex-wise distribution in the malignant ophthalmic tumour, 57.14% were males in the present study, and 42.86% were females, similar to those reported by others in Gujarat, Eastern Nepal and Singapore [2-4].

Clinical diagnosis was consistent with histopathological diagnosis in 82.5% of cases. Accuracy was low in series by Chauhan SC et al., (49%) [2]. Other studies have reported it on the higher side, 84%, 91.5% and 96% [5-7].

The clinicopathological correlation was poorest in eyelid lesions (38%) and highest for enucleation specimens (82%). This was similar to those observed by other studies [8].

Among enucleation specimens, retinoblastoma was the reason behind the high clinicohistopathological correlation. Few cases were clinically diagnosed as malignant masses, later diagnosed as inflammatory pseudotumour histologically.

The core of a good approach for treating opthalmic lesions continues to hinge on a good histopathologic study and diagnosis. So, clinicopathological correlation is crucial, requiring good communication between the clinician and the pathologist.

Malignant lesions were more commonly encountered (57.89%). This was similar to that observed by Shaikh IY et al., [10,11] [2,12-14].

Among the malignant ophthalmic lesions, retinoblastoma (28.5%), Uveal choroidal melanoma (28.5%), sebaceous carcinoma (14.28%) and SCC (14.28%) were the three most common tumours. In series by Ud-Din N et al., from Pakistan, retinoblastoma was the commonest (24.5%), followed by SCC of the conjunctiva (21.5%) and basal cell carcinoma (15.8%)[12].

Discussion

Among the benign eyelid lesions, dermoid cyst [Table/Figure 12a,b] was the commonest. Chauhan SC et al. shows the most
### Table 1: Location Wise Distribution of Lesions

| Sr. No | Location                | Cases (%) |
|--------|-------------------------|-----------|
| 1      | Eye lid                 | 15 (37.5%)|
| 2      | Conjunctiva-Cornea      | 11 (27.5%)|
| 3      | Orbit                   | 9 (22.5%) |
| 4      | Lacrimal Sac            | 2 (5%)    |
| 5      | Intraocular             | 2 (5%)    |
| 6      | Lacrimal Gland          | 1 (2.5%)  |

### Table 2: Histological Spectrum of Malignant Lesions

| Sr. No | Malignant lesion                  | Cases (%) |
|--------|-----------------------------------|-----------|
| 1      | Retinoblastoma                    | 2 (5%)    |
| 2      | Sebaceous Carcinoma               | 2 (5%)    |
| 3      | Adenoid Cystic Carcinoma          | 1 (2.5%)  |
| 4      | Squamous Cell Carcinoma           | 1 (2.5%)  |

### Table 3: Histological Spectrum of Non-Malignant Lesions

| Sr. No | Cases (%) |
|--------|-----------|
| A) Eye-Lid Lesions                           |
| 1. Dermoid Cyst                             | 5         |
| 2. Chalazion                                | 1         |
| 3. Intradermal Neavus                       | 1         |
| 4. Sebaceous Cyst                           | 1         |
| 5. Molluscum Contagiosum                    | 1         |
| 6. Lipoma                                   | 1         |
| 7. Seborrhoeic Keratosis                    | 1         |
| 8. Sebaceous Carcinoma                      | 1         |
| 9. Squamous Cell Carcinoma                  | 2         |
| B) Orbit                                    |
| 1. Schwannoma                               | 1         |
| 2. Neurofibroma                             | 1         |
common lesion as a dermoid cyst (21%), followed by an epidermal inclusion cyst (14%) and intradermal nevus (12.2%) [2]. However, intradermal nevus (21.3%) was the commonest in series by Obata H et al., and vascular lesions (21.3%) were the commonest in series by Abdi U et al., [15,21]. The most common eyelid mass was chalazion (10.8%) in a study by Akpe BA et al., [8].

Among the malignant eyelid lesions, sebaceous carcinoma (15.2%) was the commonest, which was similar to those observed by others (8.7%, 15%) [2,15]. An 86.2% of all sebaceous carcinomas occurred in the eyelid, and every case was >40 years of age [Table/Fig-13a,b]. The average age of presentation was 58.5 years with female preponderance. Studies in Korea, Nepal and India found 21.2%, 28.6% and 33% respectively [1,18,22]. However, according to Kass LG et al., it accounts for 1-5.5% of all eyelid malignancies in the USA [23]. However, basal cell carcinoma was the commonest in other series from Nepal, Sudan and Papua Guinea [1,16,24]. The most common malignant eyelid tumour in the United States and the United Kingdom is basal cell carcinoma which occurs most frequently on the lower eyelid and medial canthus in elderly patients [25,26]. The most common malignant lid mass was SCC in a study by Akpe BP et al. (16.9%) [8]. A high incidence of basal cell carcinoma and SCC is seen in individuals with fair skin due to exposure to sunlight [27].

Rare lesions encountered in the eyelid included RMS, which was immunohistochemically CD99, NSE1, Desmin and MyoD1 positive. Pure eyelid localization, such as in the case of our patient, is rare. Most cases of reported eyelid RMS represent a subcutaneous extension of the anterior orbital RMS. Of the corneal-conjunctival lesions, 72.73% were benign, and 27.27% were malignant. Similar findings have been reported by other studies [2,15].

In the study of Obata H et al., the most common benign lesion was intradermal nevus (13%) [15]. While in a study by Chauhan SC et al., the most common benign lesion was granuloma pyogenicum (22.5%), followed by intradermal nevus (4.5%) [2]. Squamous papilloma was the commonest benign tumour in a series from West Bengal [28].

The lacrimal gland carcinoma was found to be 2.5% in this series, similar to the findings of Sunderraj P et al. and Verma N et al., who found the least number of 3% and 3.4% cases respectively in their studies [18,24]. In addition, two cases of adenoid cystic carcinoma were reported.

Conclusion

- OSSN is a low-grade malignancy with an overall good prognosis. The most common prognostic factor is neoplastic cells in the margin; hence an early diagnosis by histopathology can prevent a recurrence.
- Only 17.5% of cases do not show a clinicohistopathological correlation. This suggests that histopathology is still the gold standard for the diagnosis of ocular lesions.

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