

Lesions of the Eyelid: A 5 - year Retrospective Study in a Tertiary Care Centre

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ABSTRACT

Background: Eyelid oncology is of utmost importance. Eyelid lesions are rarely lethal and completely treatable if detected early. Overview of eyelid lesions guides ophthalmogists to design for optimal therapy.

Materials and Methods: A retrospective analysis of eyelid lesion was done from 2013 to 2018 in the department of pathology, VSSIMSAR, Burla, Odisha, confirmed through histopathology. Data regarding age, sex and topography of lesion were also included.

Results: A total of 104 biopsies were evaluated. Male to female ratio were 1:1.16 for benign tumours and 1:1.36 for malignant tumours. The age of the patient at the time of biopsies ranged from $\frac{1}{2}$ year to 78 yearsold. The most common benign eyelid lesion encountered in our practice was epidermoid cyst followed by vascular haemangioma.

Conclusion: The majority of eyelid lesions were benign eyelid tumours while malignant eyelid tumours contributed25% of total eyelid lesions. Sebaceous gland carcinoma was the most common eyelid tumour found in the present study that was consistent with other studies for Asian countries.

Keywords: Benign, Eyelidlesions, Malignant, Sebaceous.

Introduction

Eyelid tumours are the most common neoplasms encountered in daily ophthalmology practice.^[1,2] They account for approximately more than 90% of all ophthalmic lesions.^[2] Approximately 5% - 10% of all skin cancers and 15% of all face tumours occur on the eyelids.^[3] In addition, some studies show that the eyelid cancers are increasing in incidence. ^[4, 5] Histologically eyelid is composed of skin and subcutaneous tissue including skin appendages [sebaceous glands (Meibomian glands and glands of Zeis), apocrine glands (glands of Moll) and eccrine sweat glands], striated muscle (orbicularis oculi), tarsus and palpebral conjunctiva. Because of the presence of different tissues in eyelid, the lesions of eyelid are diverse and different in behaviour.^[5]

Although rarely lethal, late diagnosis of the tumours may lead to more invasive surgery and various adverse effects including the visual morbidity.^[3] Therefore early histopathological diagnosis is very important, especially in malignant tumor which sometimes be clinically regarded as benign lesions. Eyelid lesions can be divided into congenital, inflammatory, traumatic, or neoplastic.^[1] Neoplastic lesions may be benign or malignant.^[1] Benign lesions are more common than malignant lesions.^[1]

Materials and Methods

A retrospective study was done over a period of five years from January 2013 to December 2018 in the Department of Pathology, Veer Surendra Sai Institute of Medical Science and Reasearch, Burla. Tissues were processed by common histopathological techniques using fixation in 10% formalin, paraffin embedding and Haematoxylin - Eosin staining. Tumor diagnosis were based on histopathology and classified as per WHO International Classification. ^[6] Data were also collected on patient's age, sex, tumour location, and clinical diagnosis.

Results

A total of 104 eyelid lesions were received in our pathology department of which 78 (75%) cases were benign tumours and 26 (25%) were malignant tumours. The patients were between the age group of $\frac{1}{2}$ year to 71 years. Maximum numbers of benign cases were found in the age group of 21-30 years followed by 10 – 20 years and 41-50 years. The lesions were rare after 60 years of age. (Table - 1) Among patients with benign tumours, 42 (53.84%) were female and 36 (46.15%) were male. A female predominance was noted overall (M:F = 0.85:1) The most common benign lesions were of epithelial origin (epidermoid cyst, squamous papilloma) 30 cases (38.4%) followed by infective lesions (occulosporidiosis,

molluscum contagiosum) 16 cases (20.51%) and vascular tumours (capillary haemangioma) 12 cases (15.38%). Benign lesions were involved in 52.51% of upper eyelid and 47.4% of lower eyelid. (Table -2)

In the present study, 26 cases (25%) were diagnosed as malignant eyelid tumors. These were seen more common in 41 - 50 year age group. Females 15 (57.7) were found to be more affected than males 11 (42.3). Sebaceous gland carcinoma 16 (61.53%) was the predominant tumour followed by basal cell carcinoma 06 (23.07%) and squamous cell carcinoma 04 (15.38%). (Table - 3) Overall,

 Table 1: Age wise distribution of eyelid lesions.

lower eyelids (61.52%) were more commonly involved by malignant tumours. In case of sebaceous gland carcinoma upper eyelids 10 cases (38.46%) were the common site whereas lower eyelids were involved in all cases of basal cell carcinoma 6 cases (23.07%) and squamous cell carcinoma 4 cases (15.38%).

Clinical diagnosis was consistent with histopathological diagnosis in 76% cases. Maximum correlation was seen in the cases of malignant diagnosis. However, infectious lesions like rhinosporidiosis were misdiagnosed clinically as neoplastic lesions.

Age group (yrs)	Benign (%)	Malignant (%)	Total (%)
1-10	08	00	08
11-20	16	00	16
21-30	20	02	22
31-40	08	00	08
41-50	14	10	24
51-60	12	04	16
61-70	00	06	06
71-80	00	04	04
81-90	00	00	00
Total	78	26	104

 Table 2: Prevalence and clinical characteristics of various benign eyelid lesions (n = 78).

BENIGN LESIONS	MALE	FEMALE	UPPER EYELID (%)	LOWER EYELID (%)	TOTAL CASES (%)	
	EPITHELIAL TUMORS					
Epidermoid cyst	10	14	14 (17.94)	10 (12.82)	24 (30.76)	
Squamous cell papilloma	04	02	03 (3.84)	03 (3.84)	06 (7.69)	
MELANOCYTIC LESIONS						
Intradermal nevus	00	03	02 (2.56)	01 (1.28)	03 (3.84)	
Junctional nevus	00	02	02 (2.56)	00	02 (2.56)	
Lentigo maligna	01	00	01 (1.28)	00	01 (1.28)	
Compound nevus	00	01	01 (1.28)	00	01 (1.28)	
ADNEXAL TUMORS						
Pilomatrixoma	01	02	01 (1.28)	02 (2.56)	03 (3.84)	
Sebaceous adenoma	01	01	02 (2.56)	00	02 (2.56)	
Nodular hidradenoma	01	01	02 (2.56)	00	02 (2.56)	
Trichoepithelioma	01	00	01 (1.28)	00	01 (1.28)	

BENIGN LESIONS	MALE	FEMALE	UPPER EYELID (%)	LOWER EYELID (%)	TOTAL CASES (%)	
	VASCULAR TUMORS					
Capillary haemangioma	04	08	03 (3.84)	09 (11.53)	12 (15.38)	
NEURAL TUMORS						
Neurilemmoma	02	00	02 (2.56)	00	02 (2.56)	
INFECTIVE LESIONS						
Rhinosporidiosis	09	05	06 (7.69)	08 (10.25)	14 (17.94)	
Molluscum contagiosum	01	01	00	02 (2.56)	02 (2.56)	
FIBROUS AND ADIPOCYTIC LESIONS						
Fibroma	00	01	00	01 (1.28)	01 (1.28)	
Lipoma	01	00	01 (1.28)	00	01 (1.28)	
DEGENERATIVE LESION						
Calcinosis cutis	00	01	00	01 (1.28)	01 (1.28)	
Total (%)	36 (46.15)	42 (53.84)	41(52.51)	37 (47.40)	78 (100)	

Table 3: Prevalence and clinical characteristics of various malignant eyelid lesions (n = 26)

MALIGNANT TUMOURS	MALE	FEMALE	UPPER EYELID (%)	LOWER EYELID (%)	TOTAL CASES (%)
Sebaceous gland carcinoma	07	09	10 (38.46)	06 (23.07)	16 (61.53)
Basal cell carcinoma	02	04	00	06 (23.07)	06 (23.07)
Squamous cell carcinoma	02	02	00	04 (15.38)	04 (15.38)
Total (%)	11 (42.30)	15 (57.70)	10 (38.46)	16 (61.52)	26 (100)



Fig. 1: Histopathological picture of molluscum contagiosum showing globules of cells filled with intracytoplasmic eosinophilic "molluscum bodies" (H and E, ×400).



Fig. 2: Histopathological picture of calcinosis cutis showing large deposits of calcium below epidermis (H and E, \times 400).



Fig. 3: Histopathology pictures of basal cell carcinoma composed of sheets of basaloid cells with peripheral palisading of the nuclei (H and E, ×100).

Discussion

Eyelid lesions are the most common pathology examined by ophthalmologists. Benign tumors are more common than malignant tumours.^[1] This is a common finding worldwide. The studies from Asian as well as western countries show this pattern. However the prevalence varies in various studies.^[1-5, 8-15] Within a period of 5 years, we found that the majority (75%) of eyelid lesions were benign which is comparable to the studies by Obata H et al ^[7] and Paul S et al ^[8]. Deprez et al ^[1] from Switzerland studied 5504 cases over a period of 19 years and found 84% of benign tumours. Huang et al ^[9] from Taiwan (2015) studied 4,521 cases and found 95% of benign tumours. Sushma TA et al ^[10] and Krishnamurthy et al ^[11] found 92.67% and 91.9% of benign tumours respectively. Ramya et al ^[12] found a slight less percentage (52.3%) of incidence of benign tumours.

In the present study benign tumours were more common in the age group of 21-30 yrs and malignant tumours were common in older age groups of 41 - 50 yrs. The age groups are slightly lower than the other studies, probably because of relatively high number of infective/ inflammatory lesions such as rhinosporidiosis occurring in this age group in this geographic area. The mean age group for benign and malignant tumours are 55.4 years and 72.5 years respectively by Huang et al ^[9], 37.28 ± 21.75 years by Jangir MK et al ^[13], 37.02 years (benign); 58.59 years (malignant) by Rathod et al ^[14].

Benign lesions were slightly more common in females than males (1:1.16). Krishnamurthy et al ^[11] and Mary Ho et al ^[15] found M:F ratio as 1:1.5 and 1:1.6 respectively. In



Fig. 4: Histopathological picture of sebaceous gland carcinoma of the Meibomian gland showing cytologic atypia, mitotic activity, and focal sebaceous differentiation. (H and E, ×400).

our study, female predominance is also seen in malignant tumours (M:F = 1:1.36). Kale SM et al ^[16] who studied 85 cases of malignant tumour also found preponderance of female patients (56.28%).

Upper eyelid was more commonly involved in benign tumours whereas lower eyelid was commonly involved in malignant tumours. The results were comparable with Sushma TA et al ^[10] and Mary Ho et al ^[15]. Among the malignant tumours sebaceous gland carcinoma found most commonly in upper eyelid, reflecting the greater numbers of Meibomian glands and glands of Zeis. Basal cell carcinoma and squamous cell carcinoma were common in lower eyelids, which may be related to the increased solar exposure of the lower eyelid. These findings were similar to studies by Pornpanich et al.^[17]

Like other studies, a variety of eyelid lesions were observed in this study. Epidermoid cysts 24 cases (30.76%) were the most common benign lesions. The results were similar to other studies. ^[10, 11, 13, 15] Other common benign tumours in this study were rhinosporidiosis 14 cases (17.94%) and capillary haemangioma 12 cases (15.38%). On the contrary, Deprez M et al ^[1] reported squamous cell papilloma (26%), Obata H et al ^[7] nevocellular nevi and Sean Paul et al¹⁰ seborrheic keratosis (19.7%) as the most common benign eyelid lesions. Huang et al ^[9], Rathod et al ^[14], and Mary HO et al ^[15] found intradermal nevus as the most common benign tumour.

The other common tumours reported by Deprez M et al ^[1] were seborrheic keratosis (21%), melanocytic nevus (20%), hidrocystoma (8%), and xanthoma/xanthelasma (6%).

According to Michaela Cristiana Coroi et al ^[2], the majority of benign eyelid tumors were squamous papillomas (84 cases), followed by seborrheic keratosis, acantholytic and hyperkeratotic types (11 cases), dermic nevocellular nevus (five cases) and capillary hemangiomas (two cases). Abdi et al ^[5] from India reported vascular tumours (21.3%), neural tumours (18.0%), dermoid cysts (16.4%), squamous cell papilloma (13.1%) and naevi (12.3%) as the common benign lesions. Huang et al ^[9] (2015) found other common benign eyelid tumours as intradermal nevus (21.1%), followed by seborrheic keratosis (12.6%), xanthelasma (11.2%) and epidermal cysts (8.2%).

Incidence of eyelid rhinosporidiosis was quite high in this study. Rhinosporidiosis is caused by Rhinosporodium seeberi and is worldwide in distribution but relatively more common in India.^[18] Two cases of Molluscum contagiosum affecting eyelid were observed in this study. It is caused by the pox virus that affects the eyelid and the periocular skin. ^[19] One case of calcinosis cutis was observed. It is characterised by deposition of insoluble amorphous calcium salts under the epidermal layer.^[20]

Regarding malignant eyelid tumours, the four most common malignancies reported worldwide are basal cell carcinoma, sebaceous gland carcinoma, squamous cell carcinoma and melanoma. The relative frequencies of these tumours vary. The most common malignant tumor in this study was reported as sebaceous gland carcinoma (61.53%) which is comparable to other studies from Asian countries by Obata H et al ^[7] (Japan), Sushma TA et al ^[10] (India), Krishnamurthy et al ^[11] (India), Jangir MK et al ^[13] (India), Bastola P et al [21] (Nepal) etc. Kaliki S et al [22] studied 536 Asian Indian patients and found sebaceous gland carcinoma (n = 285, 53%) as the most common malignant tumour, followed by basal cell carcinoma (n = 128, 24%), squamous cell carcinoma (n = 99, 18%), and miscellaneous tumours (n = 24, 4%). In western population sebaceous gland carcinoma is rare with an incidence ranging from 0.2% to 4.7%. [1, 8, 23] Recent studies from India and China have shown that sebaceous gland carcinoma accounts for 33-60% of malignant eyelid tumours.^[10, 24, 25] It is thus observed that the incidence of sebaceous gland carcinoma has a geographical variation and is more common in the Asian population. Our study also supported this fact.

Sebaceous gland carcinoma was more common in upper eyelid in the present study. The results were similar to other studies. ^[10, 15, 16] It is commonly seen in older individuals with a mean age at diagnosis ranging from 57 to 73 years. ^[1,2, 8, 9, 12, 14, 15, 16] In our series, the mean age at diagnosis was 57 years. Female preponderance seen in our studies is comparable with other studies. ^[2, 12, 14, 15]

Basal cell carcinoma (BCC) is usually the most common malignant tumour in Caucasian populations. Paul S et al ^[8] (USA), Cook BE et al ^[23](USA), Huang et al ^[9] (Taiwan), Deprez et al ^[11](Switzerland) reported 71.8%, 90.8%, 57.8% and 86% BCC respectively, which was the most common malignant tumour in their case series. However reports from India Sushma TA et al ^[10] (32.14%), Krisnamurthy et al ^[11] (26.3%), Jangir MK et al ^[13] (29.41%), Kale SM et al (48.2%) ^[16] show a relatively lower incidence of BCC. In our study BCC accounted for 23.07% and was the 2nd most common malignant tumour. Light pigmentation among whites is a risk factor for BCC; conversely, the BCC is rare among blacks. BCC is related to chronic and cumulative solar damage, and is more common in elderly and fairskinned adults.²³

Deprez M et al (Switzerland) ¹ reported BCC as the most common malignancy (86%), followed by SCC (7%) and sebaceous carcinoma (3%).<u>1</u> Lin *et al*⁴ reported that the most common eyelid tumours in Taiwan were BCC (65.1%), SCC (12.6%) and sebaceous gland carcinoma (7.9%).⁴Such differences across countries may be due to variations in skin type, genetic predisposition, geographical latitude, health-related behaviours, disease awareness and surveillance.⁴ Huang et al⁹ found most common malignant eyelid tumours as basal cell carcinomas (57.8%), followed by sebaceous gland carcinomas (21.1%) and squamous cell carcinomas (10.1%).

In the present study, most cases of BCC (61.4%) were seen in the lower eyelid. Other studies also show lower lid as a common site for BCC. ^[8, 13, 26]

Squamous cell carcinoma (SCC) is locally invasive and can metastasize. Their incidence also varies. In Western countries, SCC is the second most common eyelid malignancy and account for 5% - 10% of all eyelid malignancies.^[L, 8] In our study, it was the least common tumour (15.38%), which is comparable with other studies.^[4] The tumours were located in the lower eyelid which was consistent with the reports from Deprez et al.^[1]

The findings thus denote that there is some geographic variation seen in case of malignant tumours. The incidence of sebaceous gland carcinoma in India is high probably due to oily nature of Indians. Basal cell carcinoma and squamous cell carcinoma are rare due to low melanin pigment which provides protection from sunlight. Racial and genetic predisposition may probably play an important etiological role.^[24] SGC may clinically and histopathologically mimic other conditions like chalazion in eyelid, hence the possibility of SGC should be considered in Asians presenting with persistent or recurrent chalazion.^[27]

Due to the difference of available statistical data depending on the country and geographical region, our data provides novel information regarding demographic and histological features of eyelid tumours in our region. These epidemiological studies are extremely beneficial for the practicing ophthalmologists and the training residents and also for public health-care planning.

Conclusions

The study concluded that benign tumours are more common than malignant tumours which are more common in younger individuals and upper eyelid. Basal cell carcinoma is most prevalent in Caucasian population, whereas most of the Asian population including our study show as the most common variety. Therefore an accurate histopathological diagnosis is essential for definite diagnosis and proper management of patients with eyelid lesions.

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