e-ISSN: 0975-1556, p-ISSN:2820-2643

Available online on www.ijpcr.com

International Journal of Pharmaceutical and Clinical Research 2024; 16(8); 467-476

Original Research Article

Histopathological Study of Eyelid Lesions at a Tertiary Care Hospital in Southern Part of Assam

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Received: 25-05-2024 / Revised: 23-06-2024 / Accepted: 26-07-2024
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Conflict of interest: Nil

Abstract:

Introduction: Lesions of eyelid are common in histopathological practice. These lesions are diverse and different in behaviour. Most of them are usually benign in nature. A preoperative diagnosis and confirmation of the diagnosis using histopathological examination is very important in treatment of benign as well as malignant lesions of eyelid.

Aim of the Study: to assess the incidence of various eyelid lesions on histopathology and to compare it with similar studies.

Methodology: This is a 5 year hospital based retrospective study carried out in the Pathology Department of Silchar Medical College and Hospital, Silchar. Statistical analysis is done on the basis of various parameters like age, sex and histopathological type. These findings are analysed using various statistical methods and compared with findings of other authors to derive relevant conclusion.

Results: Out of 105 cases of eye lid specimens taken, 94 cases are found to be benign while only 11 cases proved to be malignant. Majority of them are in the age group of 40- 59 years. Females (56 /105) are found to be more affected than males (49/105). Benign lesion occurs in middle aged group (40 – 59 years) while malignant lesions are common after 60 years of age. Amongst the benign eyelid lesions, chalazion (19%) is the highest followed by epidermal cyst (16%), pyogenic granuloma and squamous papilloma with equal distribution (13% each), sebaceous cyst (12.7%), sebaceous adenoma (10.6%), intradermal nevus (5.3%), hemangioma and seberrhoeic keratosis with equal distribution (4.1%), lastly syringoma and dermoid cyst with 1.1% distribution. each. Amongst the malignant eyelid lesions, there is an equal frequency in cases of both Sebaceous gland Carcinoma (SGC) and Basal cell carcinoma (36% each) while Squamous cell carcinoma (SCC) comprised of 28% of all the malignant cases.

Conclusion: Majority of the cases are benign in nature with a female preponderence. Benign lesion occurs in middle age group while malignant lesions mostly occur in older individuals. Patients will benefit from early diagnosis and treatment with a better prognosis for these tumours if there is a high index of suspicion for malignant lesion. The diagnosis made by histopathology is crucial since advanced tumours might result in functional or cosmetic issues, or in the case of malignant tumours, metastases may happen.

Keywords: Sebaceous gland carcinoma SGH, Squamous cell carcinoma SCC, Basal cell carcinoma BCC, Hematoxylin and Eosin H &E.

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Introduction

The eyelid comprises of several layers depending on the zone of the eyelid and lower or upper eyelid. The four most prevalent layers of eyelid are: Skin and subcutaneous tissue, striated muscle (orbicularis oculi), tarsus, and conjunctiva[1]. The lower eyelid has a zone located at the lid margin and is 5 mm wide, and a distal zone, also 5 mm wide, adjoins the orbital rim. The upper eyelid has a 5 mm zone at the eyelid margin, a middle zone of 5 mm, and a 10 mm distal zone that adjoins the orbital rim and eyebrow[8]. Eyelids can have a range of nonneoplastic and neoplastic lesions of neural, vascular, epithelial, adnexal, histiocytic, and melanocytic origin due to their various histological features[3]. Based on the tissue or cell of origin, eye lid tumours can be classified as benign or malignant lesions. Most lesions on the eyelids (80–90%) are generally benign in nature. However, if malignant, it can be life threatening, with up to 30% 5-year mortality in sebaceous cell carcinoma patients[9]. The mean age for benign tumor is lower than that of malignant tumors[10]. Majority

of the benign lesions originate from the epidermis, dermis, or adnexal structures of the skin (meibomian glands or glands of Moll and Zeiss). The most common benign inflammatory lesions include chalazion and pyogenic granuloma. Infectious lesions include verruca vulgaris, molluscum contagiosum, and hordeolum. Benign neoplastic lesions include squamous cell papilloma, epidermal inclusion cyst, dermoid/epidermoid cyst, acquired melanocytic nevus, seborrheic keratosis, hidrocystoma, cyst of Zeiss, and xanthelasma.[8]

Approximately 5%-10% of all skin cancers and 15% of all face tumors occur on the eyelid [5]. Malignant cases most commonly include basal cell carcinoma, squamous cell carcinoma, sebaceous cell carcinoma, and melanoma [9]. In the Indian population, sebaceous cell carcinoma is the most common malignant eyelid tumor with more predilection towards upper eyelid [10], followed by basal cell carcinoma. Squamous cell carcinoma involving the eyelid is less common than conjunctival squamous cell carcinoma.[4]. Malignant melanoma and Merkel cell carcinoma accounting for most of the remainder of eyelid malignancies, they are associated with more spreading in nature to the surrounding structures and a more pronounced metastatic potential [2].

The histopathologic diagnosis and extent determine the course of eyelid cancers. Documenting the severity of a disease is done using the American Joint Committee for Cancer (AJCC) classification. [6]. The diagnosis of eyelid lesions requires a specific expertise and biological or pathological process, which is laborious, time consuming and subject to the experience of the pathologists.[9]

Management of eyelid malignancy consists of surgical excision with negative microscopic margin clearance followed by eyelid reconstruction in most instances, as well as the judicious use of adjuvant radiotherapy and topical chemotherapy in selected patients[7]. Therefore, it is necessary to accurately differentiate malignant lesions from benign at treatment onset for the reduction in the mortality and complications[9].

Aims and Objectives

The aim of our study is to assess the incidence of various eyelid lesions on histopathology and to compare it with similar studies.

Methodology

The present study was undertaken in the Department of Pathology, Silchar Medical College & Hospital, Silchar to study the histopathology of eyelid lesions from December 2018 to November 2023. It is a 5 year hospital based retrospective study comprising of 105 samples of eye lid lesions/ tumors being submitted to the histopathology section of Department of Pathology, Silchar Medical College & Hospital, Silchar. Data regarding age, gender, site of the lesion, final histopathological diagnosis were collected from the histopathology registers of Pathology department, Silchar Medical College and hospital. Slides and blocks were retrieved and reviewed and examined under light microscope. Re-sectioning of the paraffin embedded blocks and staining with H&E has been done for the slides having poor quality.

Inclusion Criteria: All eyelid tumors managed by surgical excision and histopathologically confirmed diagnosis cases are included in the study.

Exclusion Criteria: Cases with not having histopathologically confirmed diagnosis.

Statistical Analysis: The data collected were entered to Microsoft excel worksheet and then subjected to descriptive statistical tabulation.

Results

During the 5-year interval, a total of 105 eyelid specimens were sent for histopathological analysis. They were grouped into benign and malignant categories according to the histological differentiation.

Table 1: Case distribution according to Histologic differentiation

Categories	Cases In No.	Cases In %Age
Benign	94	89%
Malignant	11	11%
Total	105	100%

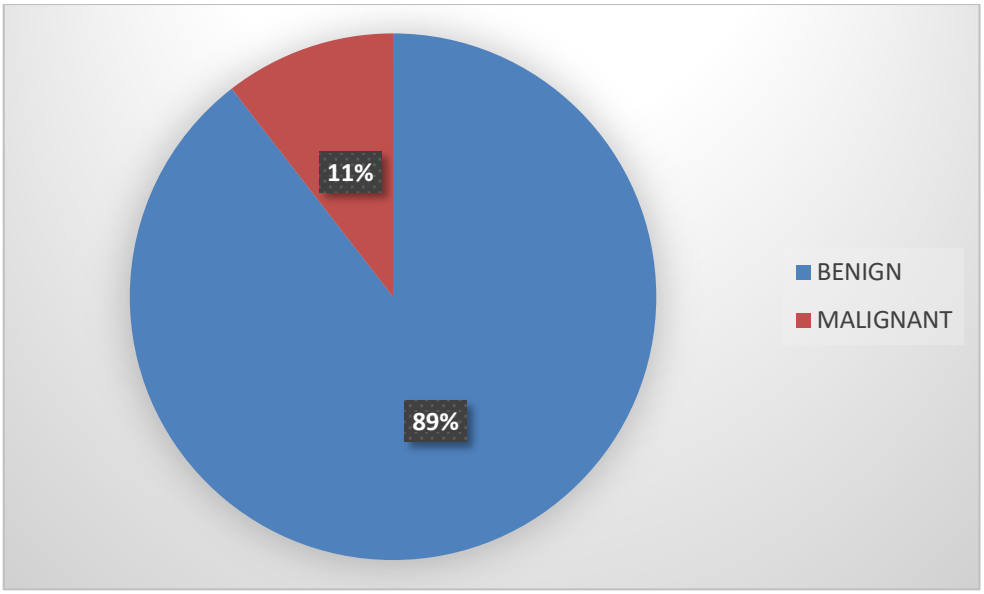

Figure 1: Histologic Categories

Out of 105 cases, 94/105 samples of eyelid lesions are found to be benign accounting for 89% of the total samples while only 11/105 samples are malignant accounting for 11% of the total cases.

Table 2: Case distribution according to age

S/no	Age range	Benign	Malignant	Total
1.	1- 19yrs	07 (7.4%)	0	07
2.	20 – 39 yrs	28 (29.8%)	02(18%)	30
3.	40- 59 yrs	39 (41.5%)	04(36.3%)	43
4.	60- 79 yrs	20 (21.3%)	05(45.7%)	25
	Total	94	11	105

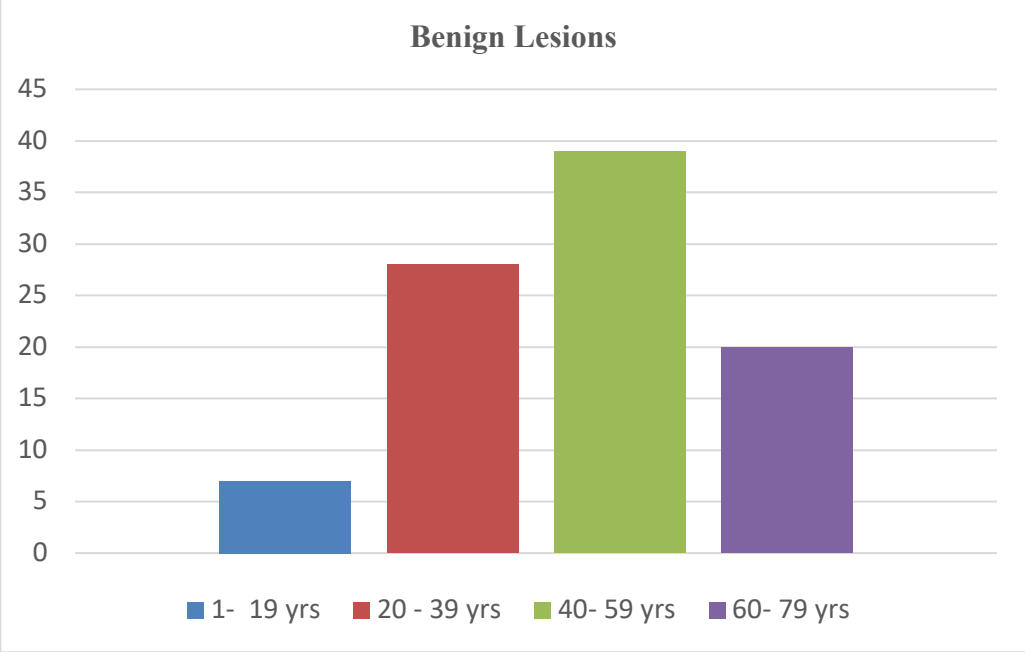

Figure 2: Benign Lesions

The age distribution of patients indicates that the majority of the benign cases fall within the 40-59 age group, which accounts for 41.5% of the total 94 cases, followed by the 20- 39 age range, comprising 29.8% of the cases and the older age group (60- 79 years) comprising of 21.3%. The youngest age group, 1- 19, represents the smallest portion with 7.4%. This distribution suggests that middle-aged adults are more commonly affected in the benign categories.

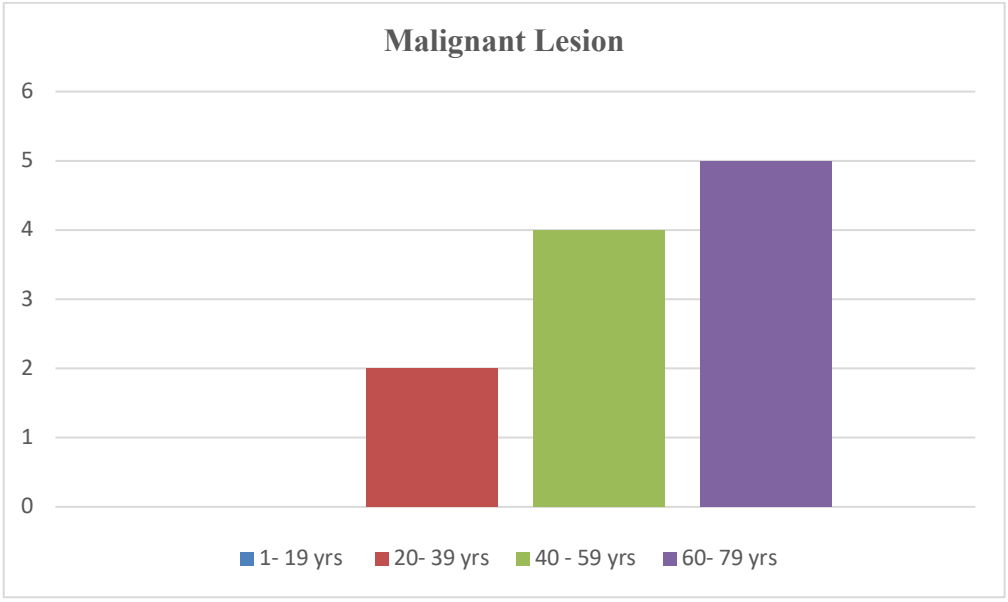

Figure 3: Malignant Lesion

In case of the malignant category, as it can be seen that no cases are present in the age group of 1- 19 years. The majority of the cases falls under 60 – 79 age range accounting for 45.7% of the total cases, followed by 40- 59 age range accounting for 36.3 % of the total cases. The minimum number of cases falls under 20 – 39 age range accounting for 18%. This indicates that the malignant lesions tend to occur especially in the older age groups.

Table 3: Case distribution according to gender

s/no	Categories	Male	Female	Total
1.	Benign	45(48%)	49(52%)	94
2.	Malignant	04(36%)	07(64%)	11
	Total	49 (46.6%)	56 (53.4%)	105

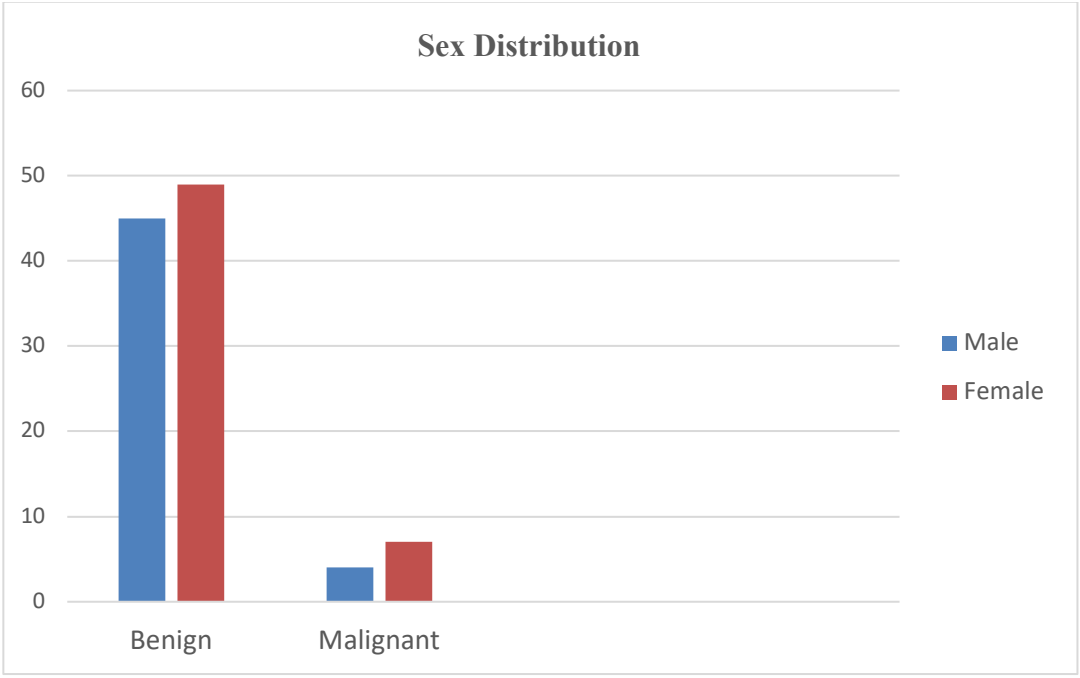

Figure 4: Sex Distribution

Regarding the gender, both benign as well as malignant categories showed female preponderance (56/105) accounting for about 53.4% of the total cases. In benign lesion, 49/94 cases are female (52%) while in malignant lesions there are 7/11 females which contributed to 64% of the total malignant cases.

Table 4: Case distribution according to histologic differentiation (Benign lesions)

s/no	Histological diagnosis	Cases in no.	Cases in %age
1.	**Benign cystic lesion**	**28**	**29.8%**
	Epidermal cyst	15	16%
	Sebaceous cyst	12	12.7%
	Dermoid cyst	01	1.1%
2.	**Melanocytic lesion**	**05**	**5.3%**
	Intradermal nevi	05	
3.	**Benign epithelial proliferation**	**16**	**17%**
	Squamous papilloma	12	13%
	Seberrhoeic keratosis	04	4.1%
4.	**Benign adnexal lesion**	**11**	**11.7%**
	Sebaceous adenoma	10	10.6%
	Syringoma	01	1.1
5.	**Vascular tumors**	**04**	**4.1%**
	Hemangioma	04	
6.	**Inflammatory lesion**	**30**	**32%**
	Chalazion	18	(19%)
	Pyogenic granuloma	12	(13%)
	Total	**94**	**100%**

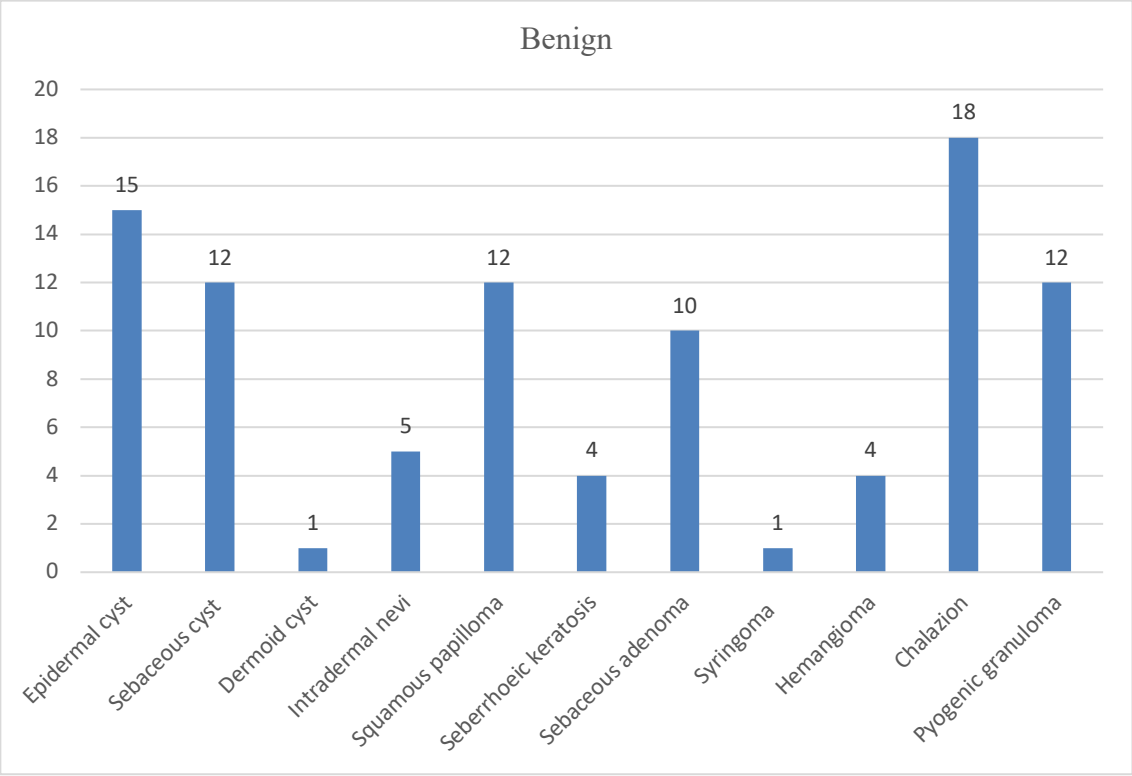

Figure 5: Benign

The inflammatory lesion formed the bulk of benign tumor constituting 30 (32%) cases. Histopathological analysis revealed chalazion 18(19%), and pyogenic granuloma 12(13%). The next group included that of benign cystic lesion contributing to 28(29.8%) of the total cases. Epidermal cyst is common, contributing to around 16% of the total cases followed by sebaceous cyst which accounted for 12.7% of the total cases while there is 1 case of dermoid cyst present.

Among the category of Benign Epithelial proliferations, Squamous papilloma 12(13%) is the most frequently encountered lesion. Other significant lesions encountered in this category are 4 (4.1%) cases of seborrheic keratosis. Among the Adnexal lesions, 10 (10.6%) cases of Sebaceous gland adenoma and 1 case of syringoma of sweat gland origin are seen, altogether contributing to 11.7% cases. In the category of Benign melanocytic tumors, Intradermal nevus represented

5(5.3%) of the total cases. The minimum cases comprised of vascular tumor (4/94) which accounted for 4.1% of the total cases.

Chalazion – Eyelid

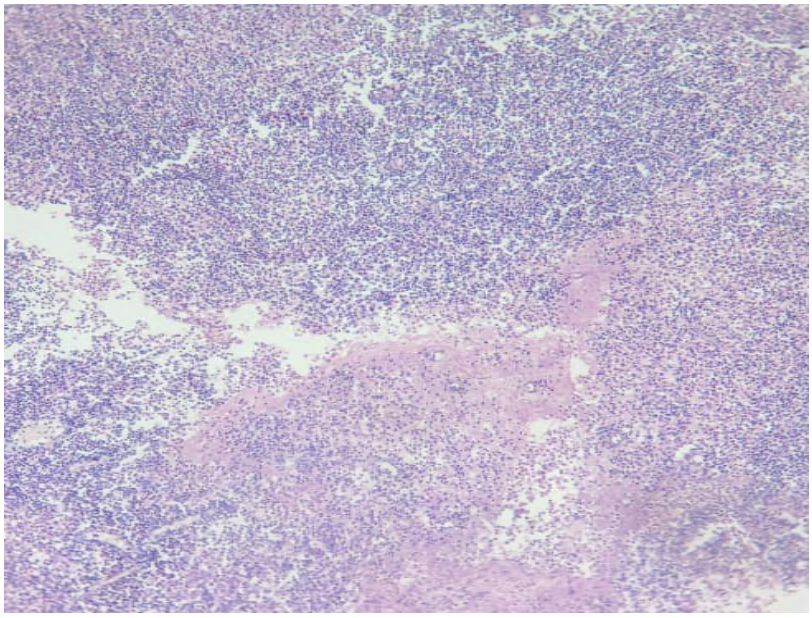

Figure 6 (a): Chalazion- H & E section showing neutrophilic granulomas, granulomatous inflammation and fibrosis

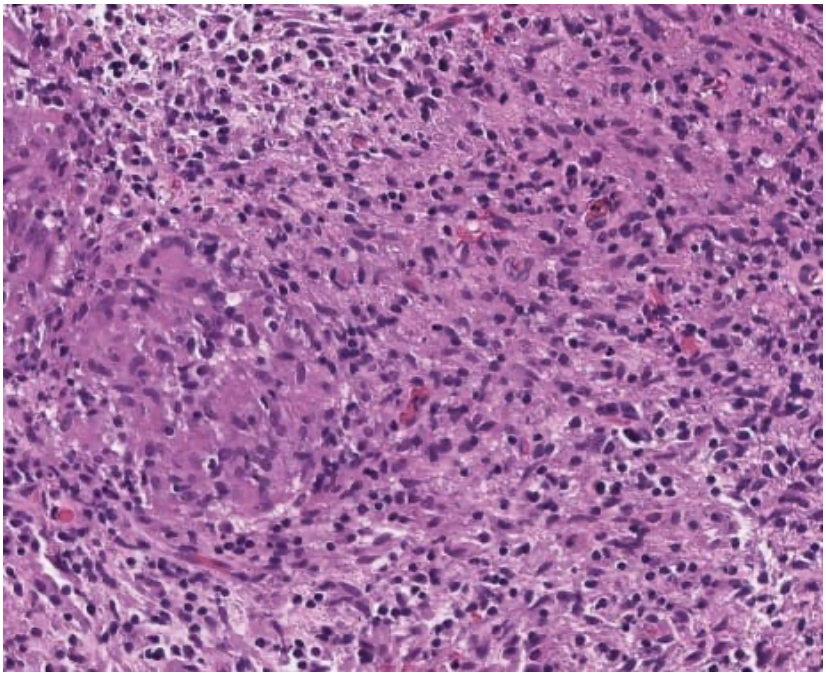

Figure 6 (b): Chalazion - H&E section showing granuloma containing neutrophils and multinucleated giant cells

Table 5: Malignant lesion

s/no	Histological diagnosis	Cases in no	Cases in %age
1.	Sebaceous gland carcinoma	4	36%
2.	Basal cell carcinoma	4	36%
3.	Squamous cell carcinoma	3	28%
	Total	**11**	**100%**

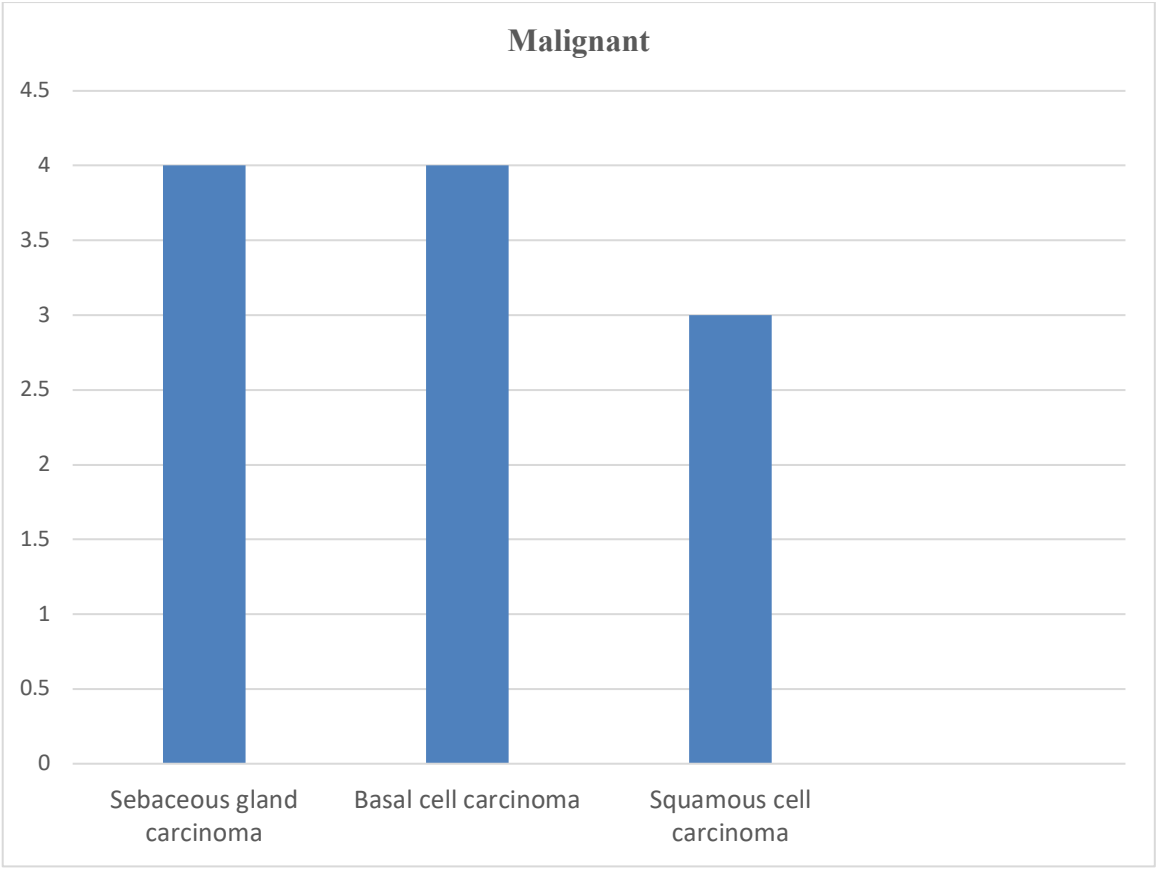

Figure 7: Malignant

In this study, 11 cases of malignant tumors have been reported. Both sebaceous carcinoma and basal cell carcinoma showed equal distribution each contributing to 36% (4/11) of the cases. 3 cases of squamous cell carcinoma are present which represented 28% of the total cases.

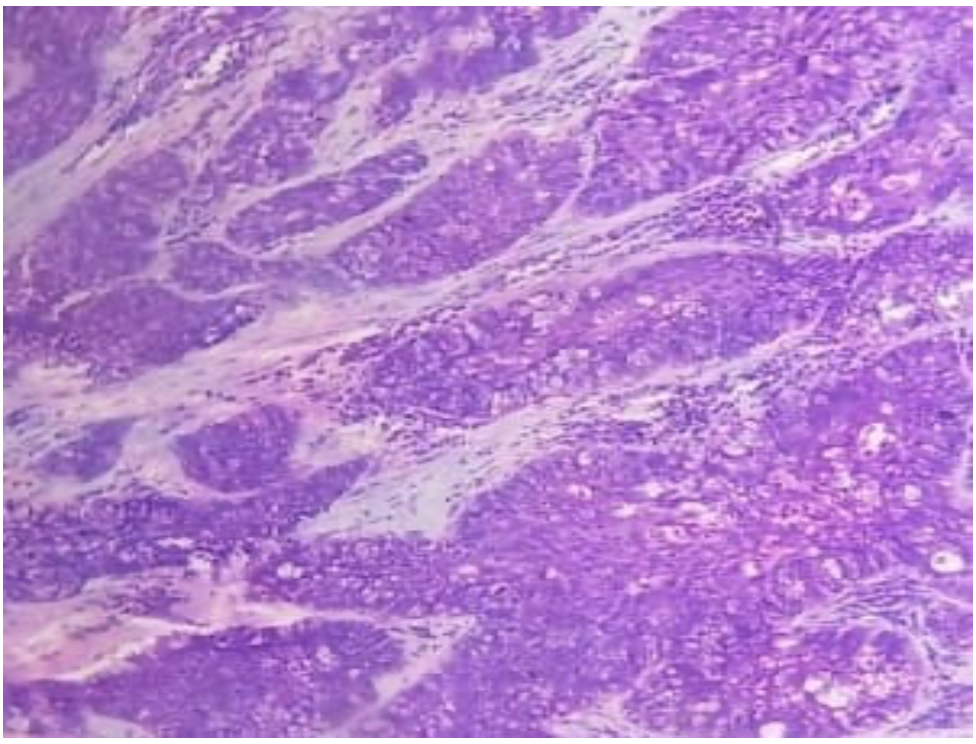

Figure 8(a): H & E section showing SEBACEOUS CARCINOMA OF THE EYELID

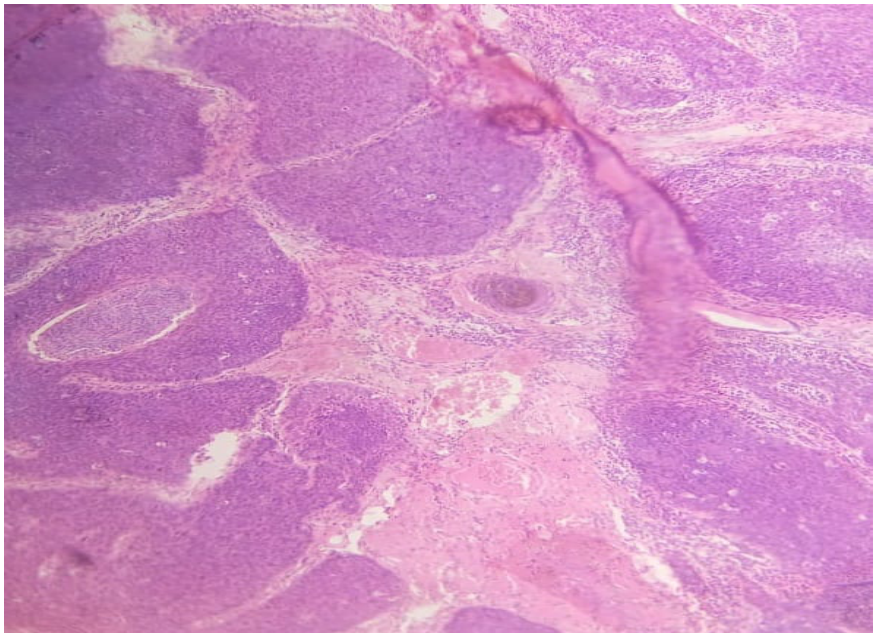

Figure 8(b): H & E section showing basaloid variant of SQUAMOUS CELL CARCINOMA OF EYE LID

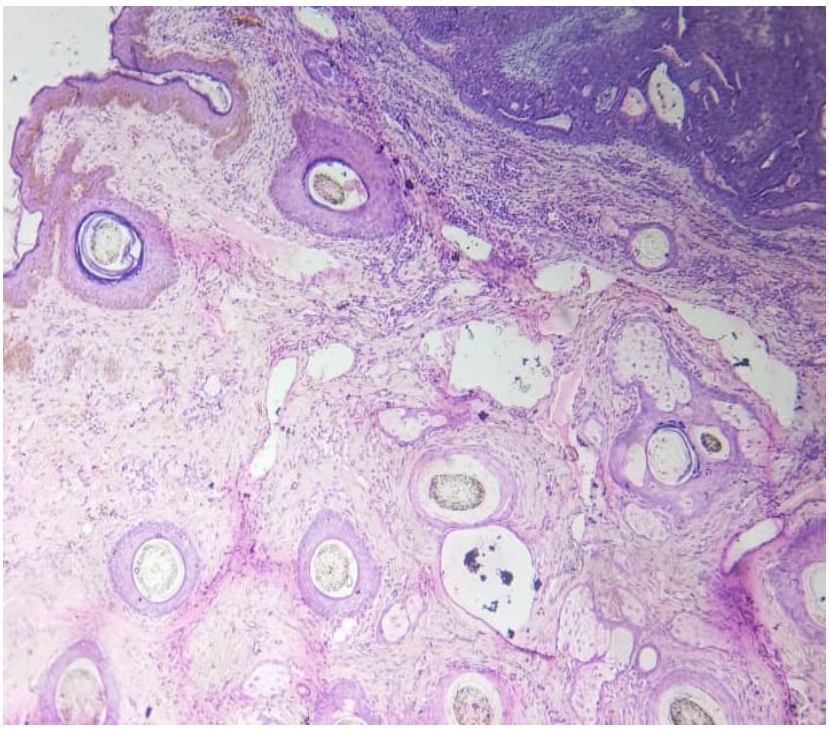

Figure 8(c): H & E section showing BASAL CELL CARCINOMA OF THE EYELID

Discussion

The mean age of patient in present study is 40 years, range: (1- 79 years). In a study done by Banerjee et al, the mean age at presentation was 40.2 ± 19.6 years (Range: 1–85 years)[13]. In a study of Mistry et al, the age of patients ranged from 2 months to 80 years [16]. In a study done by Naik et al, the age distribution of the eyelid lesions ranged from 2 years to 85 years[17]. In a study of Bhavya et al, the age of patients ranged from 1 to 90 years with a mean age of 43.4 years [11].

Out of total 105 cases, 49/105(46.7%) are male and 56/105 (53.3%) are female with M:F (male: female) ratio being 1:1.2. Similar findings were seen in Bhavya et al comprising of 183 male patients (44.2%) and 231 (55.8%) female patients (M:F ratio=1:1.3) [11]. In a study done by Fazil et al, the study group was made up of 149 (57%) female patients and 112 (43%) male patient[19]. similarly in a study of Rathod et al, out of 100 cases, 52 were females and 48 were males[20]. A female predominance was noted in all the above mentioned studies while in the study of Giri et al,

there was no sex preponderance seen in the distribution of eyelid lesions (males=109; females=110) with a ratio of 1:1 [12]. In a study of Garima et al, males were found to be more affected than females (57.82% Vs 42.18%) [18].

In the present study, benign tumors are more found in the age group between 20- 59 years where as malignant tumors are more seen in the older age groups ranging between 60 – 79 years. Similar studies were reported in the study population of Banerjee et al, where benign eyelid lesion was commonly observed in the middle-aged population (~40 years) [13]. In the study of Rathod et al, benign tumors were seen in the younger age groups as compared to malignant tumors which were seen in older age groups [20].

In the present study benign tumors are more common 94/105 (89.3%) than malignant tumors 11/105(10.7%). Similar findings were seen in the study done by Giri et al, where out of a total of 219 lesions, 192 cases (87.67%) were benign tumors and 27(12.33%) were malignant tumors [12]. In a study done by Banerjee et al, it was seen that the benign lesions constituted 81.4% (n = 809) of the total lesions analyzed while malignant lesion constituted 18.6 % (n=185) [13].

In the study of Bhavya et al, benign tumors were much more common (37.7%) than malignant tumors (9.9%). [11]. In a study done by Huang et al, among 4,521 histologically confirmed eyelid tumors, 4,294 (95.0%) were benign tumors and 227 (5.0%) were malignant tumors [14]. In the study of Garima et al, benign lesions were more common than malignant lesions in eyelid [18]. In a study done by Fazil et al, out of 296 lesions, a total of 204 benign lesions (68.9%) and 92 malignant neoplasms (31.1%) were found [19]. Also in the study of Rathod et al, out of 100 cases, 69 were benign and 31 were malignant [20]. Hence, in all the studies mentioned above we can see the preponderance of benign lesion over the malignant.

In the present study, the most common benign lesion is found to be Chalazion which represented 19% of the total cases followed by epidermal cyst representing 16% of the total cases, pyogenic granuloma and squamous papilloma 13% each, sebaceous cyst 12.7%, Sebaceous adenoma 10.6%, intradermal nevus 5.3%, hemangioma 4.1%, seberrhoeic keratosis 4.1%, dermoid cyst and syringoma 1.1% each. Similar findings were seen in the study of Banerjee et al, where the commonest benign lesion was chalazion (n = 484, 59.8%) [13]. It differed from the study of Bhavya et al, where the most common non-neoplastic lesion was epidermal cyst (14.3%) followed by parasitic granuloma (9.2%), chalazion and dermoid cyst (5.6% each) [11]. In a study of Rathod et al, majority of the benign lesion were comprised of intradermal nevus followed by squamous papilloma and compound nevus [20].

In a study of Huang et al, the most common benign eyelid tumor was found to be intradermal nevus (21.1%), followed by seborrheic keratosis (12.6%) and xanthelasma (11.2%) [14]. This study also differed from the study of Garima et al, where amongst the benign eyelid lesions, prevalence of nevus (12.17%) was the highest followed by epidermal cyst (11.30%), dermoid cyst (9.56%) and haemangioma (8.26%)[18]. Also, in a study of Fazil et al, the most frequently seen types of benign neoplasms were xanthelasma (28.4%), papilloma (14.7%), chalazion (8.8%), nevus (6.4%), moll cyst (5.9%), and capillary hemangioma (4.9%)[19].

In the present study, there is an equal distribution seen between sebaceous carcinoma and basal cell carcinoma amongst the malignant categories each representing (4/11) 36% of the total cases. Similarly, in a study of Rathod et al, 16 cases (41%) each were diagnosed of sebaceous carcinoma and basal cell carcinoma followed by squamous cell carcinoma 4 cases (10.2%) and rest comprised of malignant melanoma[20]. In a study of Bhavya et al, Sebaceous carcinoma was the most frequent malignant tumor (2.4%) followed by squamous cell carcinoma (2.2%) and basal cell carcinoma (1.5%)[11]. In a study of Banerjee et al, Sebaceous gland carcinoma (SGC) (n = 103, 55.7%) was the leading malignant lesion followed by basal cell carcinoma (n = 39, 21.1%)[13].

In the study of Huang et al, The most common malignant eyelid tumors was found to be basal cell carcinomas (57.8%), followed by sebaceous gland carcinomas (21.1%) and squamous cell carcinomas (10.1%)[14]. In a study done by Kaliki et al majority of the cases included sebaceous gland carcinoma (SGC) (n = 285, 53%) followed by basal cell carcinoma (BCC) (n = 128, 24%), squamous cell carcinoma (SCC) (n = 99, 18%), and miscellaneous tumors (n = 24, 4%)[15].

However, it differed from the study of Garima et al, where amongst the malignant eyelid lesions; Squamous Cell Carcinoma (SCC) (10.43%) was highly prevalent followed by sebaceous cell carcinoma (9.13%) and Basal Cell Carcinoma (BCC) (8.25%)[18]. Also, in the study of Fazil et al, the most common malignant lesions were basal cell carcinoma (BCC) (72.8%) followed by squamous cell carcinoma (SCC) (13%), and sebaceous gland carcinoma (SGC) (5.4%)[19].

Conclusion

The clinical manifestation and prognosis of eyelid lesions vary widely. An excellent prognosis and appropriate care depend on an early and precise histological diagnosis of these disorders. The outcome cannot be predicted without knowing the

real histology nature of the eye lid lesion. Chalazion is the most frequent benign lesion overall in this study. In the Indian subcontinent, Sebaceous Gland Carcinoma (SGC) is the most frequent malignant lesion on the eyelid. SGC and chalazion offer the best diagnostic precision. Patients' debility and loss of vision are lessened with early diagnosis and adequate care, which also assists ophthalmologists in developing the best course of action for the diagnosis and treatment of eyelid neoplasms. The most optimal method of treatment is surgical excision along with frozen section control and microscopic margin clearance. In order to prevent relapse, patients with high-risk traits should be evaluated for adjuvant radiation. To maintain both cosmetic and functional status, a multidisciplinary therapeutic approach comprising pathology, otolaryngology, dermatology, oculoplastic and radiation oncology may be required in various combinations.

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