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Original Research Article

Profile of eye lid lesions over a decade: a histopathological study from a tertiary care center in South India

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ABSTRACT

Background: Eyelid lesions are commonly encountered in histopathology practice and encompass a wide variety of non-neoplastic and neoplastic lesions. Here we report the histopathological features of eyelid lesions in patients presenting to a tertiary care center in Kerala, South India.
Methods: In this retrospective study, a total of 414 eyelid lesions were identified over a period of 10 years (January 2006 - December 2015). In each case, details including age, gender and final histopathological diagnosis were recorded from histopathology registers.
Results: Non-neoplastic lesions (52.4%) were more common than neoplastic lesions (47.6%). In the neoplastic lesions, benign tumors outnumbered (37.7%) malignant tumors (9.9%). Age of patients ranged from 1 to 90 years with a mean age of 43.4 years. M: F ratio was 1:1.3. The most common non-neoplastic lesion was epidermal cyst (14.3%) followed by parasitic granuloma (9.2%), chalazion and dermoid cyst (5.6% each). Nevus was the commonest benign eyelid tumor (13.7%) followed by squamous papilloma (9.2%), seborrhoeic keratosis and capillary hemangioma (3.9% each). Sebaceous carcinoma was the most frequent malignant tumor (2.4%) followed by squamous cell carcinoma (2.2%) and basal cell carcinoma (1.5%). Uncommon lesions encountered were actinomycosis, tuberculous granuloma, amyloid deposit, calcinosis cutis, molluscum, angiolymphoid hyperplasia with eosinophilia, xanthelasma, granular cell tumor, benign fibrous histiocytoma, mucinous eccrine adenocarcinoma etc.
Conclusions: Eyelid lesions were commoner in females and in 5th and 6th decades. Epidermal cyst and nevus were the commonest benign lesions and sebaceous carcinoma was the most common malignant tumor. The results are comparable with available data from South India.

Keywords: Eyelid, Epidermal cyst, Nevus, Parasitic granuloma, Sebaceous carcinoma

INTRODUCTION

In histopathology practice, lesions of eyelid are not uncommon. The histology of eyelid is unique comprising of skin and subcutaneous tissue with appendages [sebaceous glands (Meibomian glands and glands of Zeis), aporcine glands (glands of Moll) and eccrine sweat glands], striated muscle (orbicularis oculi), tarsus and the palpebral conjunctiva. Hence the lesions of eyelid are diverse and different in behaviour. Early histopathological diagnosis of eyelid lesions, especially malignancies, is crucial as many of the advanced tumors may cause cosmetic or functional disorders of eyelid or even distant metastases.[1]

The global distribution of eyelid swellings vary remarkably and their incidence appear to be increasing.[2-5] Eyelid lesions can be non-neoplastic or neoplastic. Most of them are benign in nature; but some are malignant and are quite similar to skin cancers. 90% of skin cancers arise in the head and neck region and 10% of them are located at eyelid level.[6] Basal cell carcinoma is the most

common malignant eyelid tumor in western countries, whereas in Asia, the frequency of sebaceous gland carcinoma and squamous cell carcinoma are relatively high.[7] Most prevalent benign lesions in various studies are dermoid cysts, nevi, epidermal cysts and papillomas.[8,9]

The literature is relatively sparse on the epidemiology and histopathological profile of eyelid lesions in South India. Most of the studies describe the eyelid tumors alone. The present study aims to characterize the epidemiological and histopathological profile of both non-neoplastic and neoplastic eyelid lesions from a tertiary care centre in Kerala, South India. To the best of our knowledge, there is no published data on the profile of eye lid lesions from Kerala.

METHODS

This is a retrospective study conducted over a period of 10 years (January 2006 to December 2015) in the Department of Pathology, Government Medical College, Kottayam which is a tertiary care teaching centre in Kerala, South India. Data regarding age, gender and final histopathological diagnosis of eyelid lesions were collected from the histopathology registers in our department. All the cases were processed by formalin fixation, paraffin embedding and Hematoxylin and Eosin staining. Special histochemical stains were done in necessary cases. Both non-neoplastic and neoplastic lesions were included in the study. Only cases with histopathological confirmed diagnosis were included. Slides of available cases were retrieved and reviewed. A total of 414 lesions were identified during the study period. The study was approved by Institutional Review Board (IRB No.38/2017).

The lesions were classified into non-neoplastic and neoplastic types. The non-neoplastic lesions included inflammatory, infectious, cystic and other miscellaneous lesions. The neoplastic lesions were typed into benign and malignant tumors. The data were then subjected to descriptive statistical tabulation and analysis.

RESULTS

A total of 414 lesions were noted during the study period. These included 217 (52.4%) cases of non-neoplastic lesions and 197 (47.6%) cases of neoplastic lesions (Table 1). The age distribution showed a peak in the fifth decade (Table 2). Non-neoplastic and neoplastic lesions were more common in fifth and sixth decades respectively. Age of patients ranged from 1 to 90 years with a mean age of 43.4 years. There were no non-neoplastic lesions noted after 80 years.

Table 1: Types and gender distribution of eyelid lesions.

Type of eyelid lesion	N		%	
Non-neoplastic lesions	217		52.4	
	Male	Female	Male	Female
	105	112	25.4	27.0
Neoplastic lesions	197		47.6	
	Male	Female	Male	Female
	78	119	18.8	28.8
Total	414		100	
	Male	Female	Male	Female
	183	231	44.2	55.8

Table 2: Age distribution of eyelid lesions.

Age group	1-10	11-20	21-30	31-40	41-50	51-60	61-70	71-80	81-90	Total
Non-neoplastic lesions	18	30	28	32	42	33	27	7	-	217
Neoplastic lesions	5	15	18	36	34	37	27	18	7	197
Total	23	45	46	68	76	70	54	25	7	414

In this study, there were 183 male patients (44.2%) and 231 (55.8%) female patients (M: F ratio = 1:1.3). A female predominance was noted, both in non-neoplastic and neoplastic cases (M:F ratio for non-neoplastic lesions= 1:1.06; for neoplastic lesions= 1:1.53) (Table 1).

Among non-neoplastic lesions, cystic lesions were the commonest (23.9%) with epidermal cyst being the most common lesion (59 cases) followed by dermoid cyst (23 cases), sudoriferous cyst (13 cases), pilar cyst (3 cases) and one case of steatocystoma [Table 3(a)]. Infectious lesions were the second commonest (14%) which included parasitic granuloma (38 cases), rhinosporidiosis (10 cases), verruca vulgaris (5 cases), tuberculous granuloma (2 cases) and one case of fungal lesion, actinomycosis and molluscum contagiosum each. Inflammatory lesions (12.1%) included 23 cases of chalazion, 20 cases of chronic inflammatory lesion and 7

cases of chronic suppurative inflammatory lesion. Miscellaneous non-neoplastic lesions (2.4%) constituted by reactive lymph node hyperplasia (2 cases), pyogenic granuloma (2 cases) and one case each of amyloid deposit, hamartoma, calcinosis cutis, angiolymphoid hyperplasia with eosinophilia, pseudolymphoma and xanthelasma were also present. Hence epidermal cyst, parasitic granuloma, chalazion and dermoid cyst were found to be the commonest non-neoplastic lesions.

Table 3(a): Gender wise distribution of non-neoplastic lesions [% expressed as % of total lesions (non- neoplastic and neoplastic)].

Histopathological diagnosis of non-neoplasic eyelid lesions (N=217)	Male		Female		Total	
	N	%	N	%	N	%
Inflammatory	**24**	**5.8**	**26**	**6.3**	**50**	**12.1**
Chalazion	14	3.4	9	2.2	23	5.6
Chronic inflammatory lesion	8	1.9	12	2.9	20	4.8
Chronic suppurative inflammatory lesion	2	0.48	5	1.2	7	1.7
Infectious	**21**	**5.1**	**37**	**8.9**	**58**	**14.0**
Parasitic granuloma	10	2.4	28	6.8	38	9.2
Rhinosporidiosis	8	1.9	2	0.48	10	2.4
Verruca vulgaris	1	0.24	4	1.0	5	1.2
Tuberculous granuloma	1	0.24	1	0.24	2	0.48
Fungal lesion	1	0.24	-	-	1	0.24
Actinomycosis	-	-	1	0.24	1	0.24
Molluscum	-	-	1	0.24	1	0.24
Cystic lesions	**57**	**13.8**	**42**	**10.1**	**99**	**23.9**
Epidermal cyst	37	8.9	22	5.3	59	14.3
Dermoid cyst	13	3.1	10	2.4	23	5.6
Sudoriferous cyst	6	1.4	7	1.7	13	3.1
Pilar cyst	1	0.24	2	0.48	3	0.7
Steatocystoma	-	-	1	0.24	1	0.2
Miscellaneous lesions	**3**	**0.7**	**7**	**1.7**	**10**	**2.4**
Reactive lymph node hyperplasia	1	0.24	1	0.24	2	0.48
Pyogenic granuloma	1	0.24	1	0.24	2	0.48
Amyloid deposit	-	-	1	0.24	1	0.24
Hamartoma	1	0.24	-	-	1	0.24
Calcinosis cutis	-	-	1	0.24	1	0.24
Angiolymphoid hyperplasia with eosinophilia	_	_	1	0.24	1	0.24
Pseudolymphoma	-	-	1	0.24	1	0.24
Xanthelasma	-	-	1	0.24	1	0.24
Total non-neoplastic lesions	105	25.4	112	27.0	217	52.4

Table 3(b): Gender wise distribution of neoplastic lesions [% expressed as % of total lesions (non- neoplastic and neoplastic)].

Histopathological diagnosis of neoplasic eyelid lesions (N=197)	Male		Female		Total	
	n	%	n	%	n	%
Benign tumors	**56**	**13.5**	**100**	**24.2**	**156**	**37.7**
Intradermal nevus	8	1.9	39	9.4	47	11.3
Squamous papilloma	18	4.4	20	4.8	38	9.2
Seborrhoeic keratosis	6	1.5	10	2.4	16	3.9
Capillary hemangioma	8	1.93	8	1.93	16	3.9
Appendage tumor	5	1.2	6	1.5	11	2.7
Compound nevus	3	0.7	7	1.7	10	2.4
Neurofibroma	2	0.48	5	1.2	7	1.7
Schwannoma	1	0.24	2	0.48	3	0.7
Inverted follicular keratosis	1	0.24	1	0.24	2	0.48
Cavernous hemangioma	2	0.48	-	-	2	0.48
Granular cell tumor	1	0.24	-	-	1	0.24

Benign fibrous histiocytoma	-	-	1	0.24	1	0.24
Lipoma	1	0.24	-	-	1	0.24
Nerve sheath myxoma	_	_	1	0.24	1	0.24
Malignant tumors	**22**	**5.3**	**19**	**4.6**	**41**	**9.9**
Sebaceous carcinoma	3	0.7	7	1.7	10	2.4
Squamous cell carcinoma	4	1.0	5	1.2	9	2.2
Basal cell carcinoma	5	1.2	1	0.24	6	1.5
Non-hodgkin lymphoma	3	0.7	1	0.24	4	1.0
Carcinoma in situ	3	0.7	1	0.24	4	1.0
Poorly differentiated tumor	2	0.48	1	0.24	3	0.7
Malignant melanoma	1	0.24	1	0.24	2	0.48
Keratoacanthoma	-	-	2	0.48	2	0.48
Mucinous eccrine adenocarcinoma	1	0.24	-	-	1	0.24
Total	78	18.8	119	28.8	197	47.6

Table 4: Comparison of recent data on eyelid lesions from different parts of world. (5 and 13*-From South India; 12#- study of benign eyelid lesions).

Variables	Present study	Mary HO et al[9]	Nithithanaphat C et al[7]	Rathod A et al[5]	Yasser h. Al-Faky[12#]	Krishnamurthy H et al[13*]
Number of cases	414	198	316	100	222	235
M:F ratio	1:1.3	1:1.6	1:1.5	1: 1.08	1:1.5	1:1.5
Mean age / age range	43.4y Age range =1y to 90y	54y (benign); 68y (malignant)	54.2y Age range= 1(m) to 99y	37.02y (benign); 58.59y (malignant)	- Age range = 2y to 87y	- Age range = 3y to 85y
Most common non-neoplastic lesion	Epidermal cyst	Epidermal cyst	Epidermal cyst	Epidermal cyst	-	Epidermal cyst
Most common benign tumor	Intradermal nevus	Intradermal nevus	Nevus	Nevus	Sweat gland hidrocystoma	Nevus
Most common malignant tumor	SC	BCC	BCC	BCC and SC	-	SC

SC: Sebaceous carcinoma; BCC: Basal cell carcinoma; m: Months; y: Years

In the neoplastic lesions, benign tumors were much more common (37.7%) than malignant tumors (9.9%) [Table3(b)]. Intradermal nevus was the most common benign tumor (47 cases), followed by squamous papilloma (38 cases), seborrhoeic keratosis and capillary hemangioma (16 cases each), appendage tumor (11 cases), compound nevus (10 cases), neurofibroma (7 cases), schwannoma (3 cases), inverted follicular keratosis and cavernous hemangioma (2 cases each), granular cell tumor, benign fibrous histiocytoma, lipoma and nerve sheath myxoma (1 case each).

Sebaceous carcinoma was the most frequent malignant tumor in our study (10 cases /2.4%) followed by squamous cell carcinoma (9 cases), basal cell carcinoma (6 cases), Non-Hodgkin lymphoma and carcinoma in-situ (4 cases each), poorly differentiated tumor (3 cases), keratoacanthoma and malignant melanoma (2 cases each) and one case of mucinous eccrine adenocarcinoma.

Altogether, epidermal cyst was the commonest eyelid lesion (14.3%) and nevus (intradermal+compound) (13.7%) was the commonest benign tumor in this study.

DISCUSSION

Eyelid lesions encountered in histopathology practice are mostly non-neoplastic but can be neoplastic as well. Among neoplastic lesions, benign tumors are much more common.[10,11] The most common benign eyelid lesion was variably reported in previous literatures from different countries; Deprez and Uffer (Switzerland), Kersten (United States) and Ni (China) reported papilloma (26%, 43.9% and 27.9%, respectively), Chi and Beak (South Korea) found nevus (57.1%), Hsu and Lin (Taiwan) documented epidermal cyst (23.1%), Sean Paul et al. (San Francisco) showed seborrhoeic keratosis (19.7%) and Yasser H. Al-Faky (Saudi) found sweat gland hidrocystoma (29.3%) as the most common benign eye lid lesion.[11,12]

In India, Rathod A et al, (Hyderabad) found nevus (17%), Karan S et al, (Hyderabad) reported dermoid cyst (37.5%), Krishnamurthy H et al, (Karnataka) found epidermal cyst (30.5%) followed by nevus (17.5%), Remya et al, (Telangana) showed capillary hemangioma

(31.1%) followed by nevus (20%) as the most common benign eye lid lesions.[5, 8,13,14]

In our study, non-neoplastic lesions were more common than neoplastic lesions. Among neoplastic lesions, benign tumors were much common than malignant ones. We found epidermal cyst as the most common non-neoplastic lesion (14.3%) and nevus as the most common benign tumor (13.7%). This is compared to data from south India and other parts of the world (Table 4).

Available data from different parts of the world are sparse on the incidence of infectious eyelid lesions, while, in this study we came across 38 cases (9.2%) of parasitic granuloma which constituted second commonest non-neoplastic lesion. Out of these 38 cases, 25 cases showed dirofiaria in sections. Other infectious etiologies we found were rhinosporidiosis (2.4%), verruca vulgaris (1.2%), tuberculous granuloma (0.48%) and actinomycosis, fungal lesion and molluscum contagiosum (0.24% each). Other common non-neoplastic lesions encountered were chalazion and dermoid cyst (5.6% each), chronic inflammatory lesion (4.8%), sudoriferous cyst (3.1%) and chronic suppurative inflammatory lesion (1.7%). Uncommon entities like pilar cyst, reactive lymph node hyperplasia, pyogenic granuloma, steatocystoma, amyloid deposit, hamartoma, calcinosis cutis, angiolymphoid hyperplasia with eosinophilia, pseudolymphoma and xanthelasma were also noted in our study. Yasser H. Al-Faky (Saudi), Paul R et al. (Bangladesh), Mary Ho et al. (Hong Kong) and Pudasaini S et al. (Nepal) have reported cases of molluscum contagiosum, xanthelasma, rhinosporidiosis, pyogenic granuloma, steatocystoma and calcinosis cutis in their studies.[9,12,15,16]

Among nevi, intradermal nevi were more common (11.3%) than compound nevi (2.4%). Squamous papilloma (9.2%), seborrhoeic keratosis (3.9%), capillary hemangioma (3.9%), appendage tumors (2.7%) and neurofibroma (1.7%) were the other common benign tumors in our series. In the benign appendage tumors, nodular hidradenoma and pilomatricoma (3 cases), sebaceous adenoma (2 cases), basal cell adenoma and trichoepithelioma (1 case each) were noted. One appendage tumor was unclassified. Uncommon benign tumors we found were schwannoma, inverted follicular keratosis, cavernous hemangioma, granular cell tumor, benign fibrous histiocytoma, lipoma and nerve sheath myxoma. Similar benign tumors were described in other studies.[15,18,19]

Both benign and malignant lesions were more common in females with M: F ratio for non-neoplastic lesions= 1:1.06 and for neoplastic lesions= 1:1.53. Other studies have also showed a female predominance of eyelid lesions.[10,12,13]

In this study, age distribution showed a peak in 5th decade. Mean age of presentation was 43.4 years. Similar studies from Asia have reported mean age of presentation as 43.2 years in Bangladesh, 52.4 years in Thailand, 62.6 years in Taiwan.[15,17] Non-neoplastic and neoplastic lesions were more common in fifth and sixth decades respectively. Commonest non-neoplastic lesion in the fifth decade was epidermal cyst; commonest benign and malignant tumors in the sixth decade were squamous papilloma and basal cell carcinoma respectively. In the first decade, most common lesions were chalazion and dermoid cyst (5 cases each), followed by 2 cases each of parasitic granuloma, chronic inflammatory lesion and sudoriferous cyst and one case each of epidermal cyst, neurofibroma, capillary hemangioma, cavernous hemangioma, pilomatricoma, rhinosporidiosis and compound nevus. In the ninth decade, malignant tumors were more; sebaceous carcinoma being the commonest.

Though basal cell carcinoma is the most common malignant tumor of the eyelid worldwide, sebaceous carcinoma (SC) is more common in Asian countries.[11,15,18] SC is an aggressive malignant neoplasm with sebaceous differentiation. In the present study, SC was the most common malignant tumor (2.4%) and females were more affected. Next common malignancy was squamous cell carcinoma (SCC) (2.2%) and was more in females. Basal cell carcinoma (BCC) came next (1.5%), but was found to be more in males. These three types of eyelid malignancies have different clinical presentation, prognosis and treatment response.

From India, Karan S et al, (Hyderabad) reported three most common malignant tumors as SC (55.5%), BCC (33.3%) and SCC (11.1%), Sihota R et al, found SC (32.6%), BCC (29.8%) and SCC (28.1%), Abdi UN et al, showed BCC (38.8%), SC (27.1%) and SCC (22.4%), Krishnamurthy H et al, documented SC (31.6%), BCC (26.3%) and SCC (21%).[2,8,13,20] The present study has analyzed the entire spectrum of eyelid lesions (non-neoplastic and neoplastic) and hence the malignant tumor incidence is low when compared to other Indian studies. Considering only the malignant tumors (41cases) in our study, there were 24.4% SC, 22% BCC and 14.6% SCC. The mean age of presentation of SC in this study was 68 years. Other malignant tumors in this study were non-Hodgkin lymphoma and carcinoma in situ (4 cases each), poorly differentiated tumor (3 cases), malignant melanoma and keratoacanthoma (2 cases each) and one case of mucinous eccrine adenocarcinoma.

A similar retrospective study over five years documented 53 (17.8%) inflammatory conditions, 212 (71.4%) benign eyelid tumors and 32 (10.8%) malignant eyelid tumors, included 13 SC, 12 BCC, 3 malignant melanomas,2 SCC, one apocrine adenocarcinoma and one metastatic carcinoma.[10]

CONCLUSION

Eyelid lesions are diverse and vary in clinical presentation and prognosis. Early and accurate

histopathological diagnosis of these lesions is essential for proper management and favorable prognosis.

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