

A Study on Clinicopathological Spectrum of Conjunctival Lesions in Rural Tertiary Care Hospital

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Abstract: *Purpose:* The purpose of this study was to assess the relative frequency of epithelial lesions of the conjunctiva in rural tertiary care hospital of Mewat, Haryana. *Methods:* A retrospective study of 1333 consecutive cases received during one year (2017-18) at the department of Ophthalmology, SHKM GMC Nalhar Nuh was performed. Excision biopsy was done in all conjunctival lesions (2.25%) and sent to department of pathology. Demographic data was retrieved from histopathological request forms and specimens were categorized and analyzed by mean percentage. The histopathologic diagnoses were categorized into benign, pre-malignant, and malignant lesions. The prevalence of various types of conjunctival lesions was calculated. *Results:* Of the 1333 specimens reviewed, 295 were conjunctival lesions (2.25%). Benign lesions were most prevalent (78.8%), followed by premalignant (13.8%) and malignant (7.4%) lesions. Pterygia were the most common benign lesions (69.2%), intraepithelial dysplasia constituted most cases of premalignant lesions (94.1%), and squamous cell carcinoma was the most frequent malignant lesion (93.6%). Benign lesions were the most common type of lesions in all age groups, however the prevalence of malignant lesions increased significantly with age ($P < 0.001$). *Conclusions:* Benign lesions were the most common conjunctival lesions with pterygia on top of the list, while intraepithelial neoplasia and squamous cell carcinoma were the most common premalignant and malignant lesions, respectively. Conjunctival malignant lesions were more prevalent with older age.

Keywords: epithelial lesions, conjunctiva, neoplasia.

INTRODUCTION

The conjunctiva is readily visible and partially exposed to sunlight; therefore, conjunctival tumors and related lesions are recognizable early in their course. Epithelial lesions of the conjunctiva comprise a large variety of conditions, from benign tumors such as papilloma, to malignant lesions such as squamous cell carcinoma (SCC) (Shields, C. L *et al.*, 2004). Ocular surface squamous neoplasia (OSSN) is a recent term that categorizes precancerous and malignant lesions, including conjunctival intraepithelial neoplasia (CIN) and SCC (Ogun, G. O *et al.*, 2009; Lee, G. A *et al.*, 1995). Main factors associated with conjunctival epithelial lesions include sunlight exposure, human papilloma virus (HPV) subtypes 6, 11, 16, 18, and human immunodeficiency (HIV) infection (Grossniklaus, H. E *et al.*, 1987; Peer, J. 2005). Other factors associated with OSSN are old age, male sex and fair skin (Lee, G. A *et al.*, 1995; Sun, E. C *et al.*, 1997). According to (Newton, R *et al.*, 1996) the incidence of ocular SCC increases 49% with every 10-degree decline in latitude. Higher exposure of male subjects to sunlight

while working outdoors may explain the higher prevalence of OSSN in males (Alves, L. F. D. A *et al.*, 2011; Lee, G. A *et al.*, 1997). As this area has a homogenous rural population composed of inhabitants (with a low immigration rate) with more intense and longer duration of sun exposure. The current study was conducted to identify the prevalence of various types of conjunctival lesions at a tertiary care referral center located in the Mewat, Haryana.

MATERIAL & METHODS

The present study was carried out retrospectively from January 2017 to January 2018 in Department of Ophthalmology, SHKM, Government medical college, Nalhar, Nuh. Out of 1333 consecutive cases received, 295 were conjunctival lesions (2.25%). Excision biopsy was done in all conjunctival lesions (2.25%) and sent to Department of Pathology for histopathological examination. Demographic data was retrieved from histopathological request forms and specimens were categorized and analyzed by mean percentage.

The histopathologic diagnoses were categorized into

- A Benign
- B Pre-Malignant
- C Malignant lesions

Prevalence of various types of conjunctival lesions was calculated and associations between conjunctival lesions as and demographic data were analyzed by SPSS version 19.

RESULTS

A total of 295 conjunctival specimens from 1333 patients were analyzed. Patient age ranged from 5 to 75 (mean 40.2 ± 16.0) years and there was no sex predilection (58.7% of cases were female). Out of 295 specimens, 283 (96.0 %) were categorized as benign, 11 (3.8%) as premalignant, and 5 (1.5%) as malignant lesions. Data for the three types of conjunctival lesions are detailed in Table-1.

Table-1: Classification and frequency of conjunctival lesion:

Lesion	No. of cases	Total frequency
Benign		
Pterigium	218	73.8%
Melanocytic lesions	19	6.44%
Conjunctival cyst	18	6.1 %
Dermoid Cyst	10	3.38%
Epithelial hyperplasia	10	3.38%
Pyogenic Granuloma	5	1.6%
Hemangioma	3	1.0%
Pre malignant		
Conjunctival Intraepithelial Neoplasia	5	1.6%
Actinic kertosis	6	2.0%
Malignant		
Squamous Cell Carcinoma	5	1.6%

Table-2: Distribution of conjunctival lesions according to Gender & Age Distribution

Lesions	Gender		Mean Age (In years)
	Male	Female	
Benign			
Pterigium	47.1%	52.9 %	43.7
Conjunctival Cyst			
Dermoid cyst			
Melanocytic Lesions			
Epithelial hyperplasia			
Pyogenic Granuloma			
Hemangioma			
Pre malignant			
Conjunctival Intraepithelial Neoplasia	66.2%	33.8%	53.9
Actinic kertosis			
Malignant			
Squamous Cell Carcinoma	49%	51%	56.0

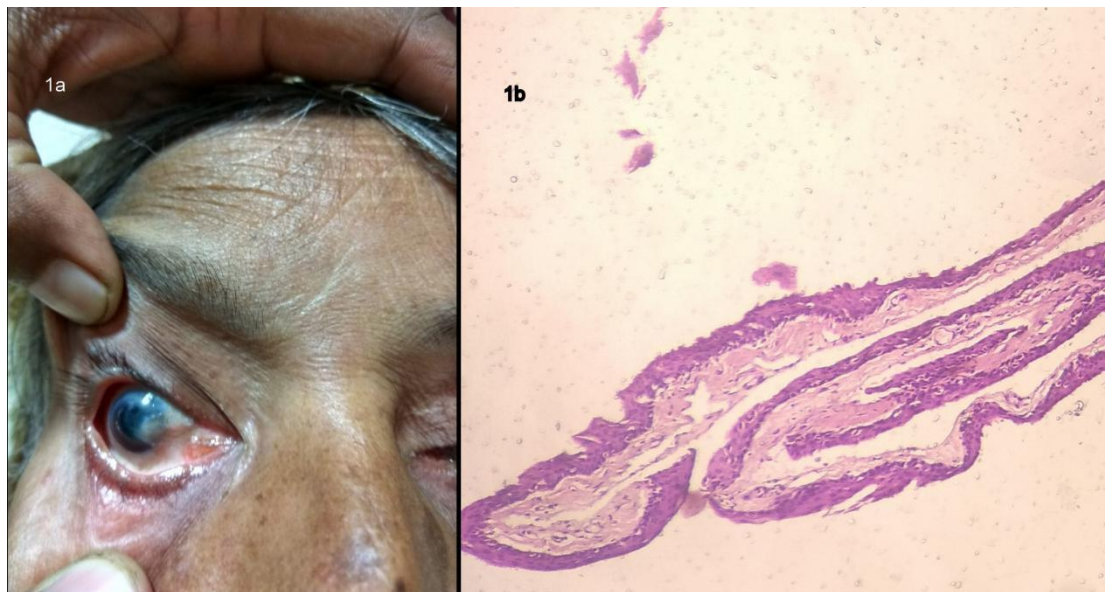


Fig 1a & b: Photograph and histopathological picture of Pterygium



Fig 2a & b: Photograph and histopathological picture of Conjunctival Naevus

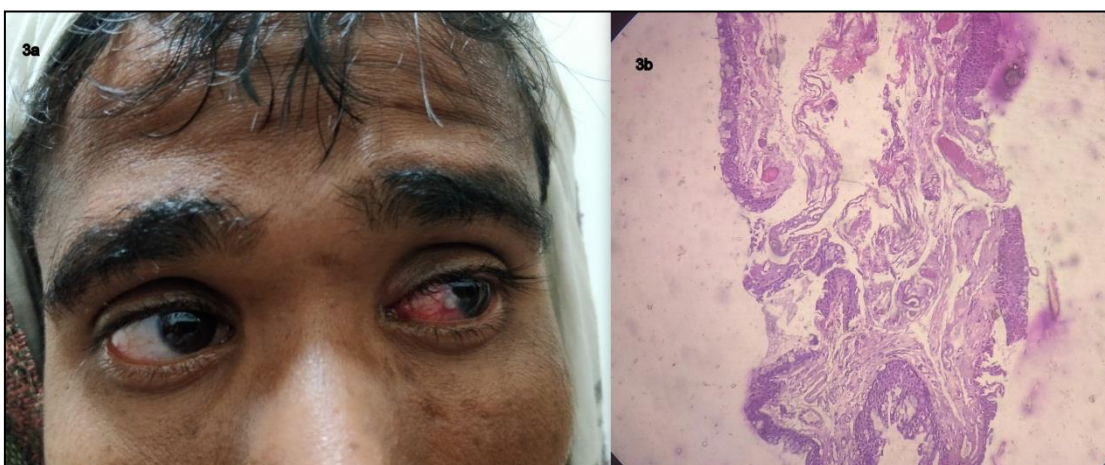


Fig 3a & b: Photograph and histopathological picture of Conjunctival Cyst

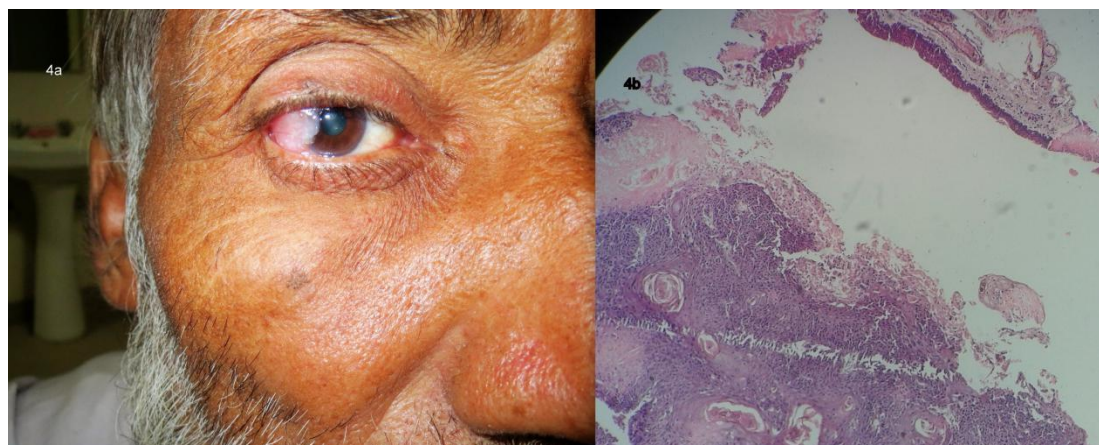


Fig 4a & b: Photograph and histopathological picture of Conjunctival Squamous Cell Carcinoma

Pterygia were the most common benign lesions (73.8%) and were combined with cysts in 2.3% of cases. Melanocytic lesions such as nevi and lentigo were the second most common benign lesions (6.44%) followed by conjunctival cysts (6.1%). Conjunctival intraepithelial neoplasia (CIN) was the most common premalignant lesion (94.1%); these lesions had been diagnosed clinically as pterygia in 31.2% of cases. Actinic keratosis were the second (4.4%) most frequent premalignant lesions respectively. SCC was the most common malignant lesion (93.6%), followed by malignant melanoma (6.4%). Mean age of patients with benign, premalignant and malignant lesions was 43.7, 53.9 and 56.0 years, respectively. The age distribution of the patients with regard to the histological diagnosis is illustrated in Figure-1. No significant sex predilection was observed for benign (52.9% female cases) or malignant (51% female cases) conjunctival lesions, however premalignant lesions occurred twice as commonly in men (66.2% in males versus 33.8% in females). Although, benign lesions were most common in all age ranges, after the age of 60, a decline in the incidence of benign lesions and a significant increase in the prevalence of premalignant and malignant lesions was observed ($P < 0.001$).

DISCUSSION

The conjunctiva is a thin mucous membrane which covers the anterior aspect of the eyeball and the posterior surface of the eyelids (Shields, C. L *et al.*, 2004). It serves to protect the cornea and the interior of the eyeball. This is effected via secretion of mucus, antibacterial proteins, electrolytes, and water (Ogun, G. O *et al.*, 2009). It is divided into three portions: (a) tarsal or palpebral, (b) forniceal, and (c) bulbar (Lee, G. A *et al.*, 1995). Microscopically, it is seen to have a nonkeratinizing squamous epithelium, containing mucin-secreting goblet cells. Its superficial location exposes it to frequent injurious stimuli and as such is prone to develop various (inflammatory, neoplastic, and degenerative) pathologies much more commonly than other orbito-ocular components. Degenerative lesions

such as pterygium and pinguecula could be managed on an outpatient basis, while neoplasms usually require surgical intervention. It is noteworthy that all these lesions require histopathologic confirmation of diagnoses. This analysis of 295 conjunctival lesions can be used a representative sample of the rural population. Studies on a large cohort of eyes can also be used for future comparative studies. In this study, the most common benign lesion that was excised was pterigium.

Dermoids, common conjunctival tumors in children are rarely found in adults. Histopathologically, they consist of dermis like connective tissue containing pilosebaceous units. These lesions may have other choristomatous tissue including brain, cartilage. Fat, sweat glands & lacrimal gland. Dermolipomas are yellow, soft lesions which consist of dense dermis like connective tissue & adipose tissue covered by epithelium. Ectopic lacrimal gland often presents as an apparent cystic lesion because of dilated duct.

Ocular surface squamous neoplasia (OSSN) comprises dysplasia, carcinoma in situ and squamous cell carcinoma involving the conjunctiva as well as the cornea (Newton, R *et al.*, 1996). Most commonly OSSN arises in the limbal region, occurring particularly in elderly males, it is found in demographics, but is more common in countries that have a higher level of sunlight exposure.

The main etiological factors that are associated with epithelial lesions of conjunctiva include sunlight exposure, HPV subtypes 6, 11, 16 and 18 and HIV (Newton, R *et al.*, 1996). Many other risk factors for the development of OSSN have been suggested, such as chronic inflammatory diseases. OSSN has also been associated with benign mucous membrane pemphigoid, chronic blepharoconjunctivitis, vitamin A deficiency and, in one case, atopic eczema. OSSN has been associated with pinguecula and pterygium due to the fact these conditions are important differential diagnoses in establishing OSSN (Peer, J. 2005;

Sivalingam, V *et al.*, 1990; Akpek, E. K *et al.*, 1999; Heinz, C *et al.*, 2003).

This study showed that benign conjunctival lesions were the most common type of lesions across all age groups. Premalignant and malignant cases were the second and third leading lesions of the conjunctiva, and a significant increasing trend was observed in their prevalence with older age. The results of this study are comparable to previous reports with regard to the prevalence of conjunctival lesions (Grossniklaus, H. E *et al.*, 1987; Mondal, S. K *et al.*, 2012), and were consistent with the report by Lee and Hirst (Lee, G. A *et al.*, 1997), in which aging was stated as an important risk factor for premalignant and malignant conjunctival epithelial lesions.

Ocular surface squamous neoplasia is more common in countries with high exposure to sunlight. In line of this fact, the interpalpebral zone, the part of the conjunctiva heavily exposed to the ultraviolet light is the most prevalent site of the malignancy (Lee, G. A *et al.*, 1995; Lee, G. A *et al.*, 1997; Newton, R *et al.*, 1996; Peer, J. 2005). Malignant epithelial tumors are more common in men than in women because men spend more time outdoors and are exposed to sunlight more. However, In a study in Zimbabwe, 70% of the patients with OSSN were female due to their involvement in agriculture and harvesting in farms, which led to high sun exposure (Pola, E. C *et al.*, 2003). Regarding exposure time, malignant tumors in our presentation had a significant association with the sun exposure being more than 180days/year in comparison to benign tumors (p- value<0.001). Precancerous lesions are also correlated with sun exposure of more than 180days/year, devoid of significant association (Peralta, R *et al.*, 2011). Actinic changes/pterygium and conjunctival intraepithelial neoplasia (CIN), which were present in 63.5% and 67.3% of squamous carcinoma, respectively.

In summary, benign lesions were the most common conjunctival lesions in all age groups in the current series, with premalignant and malignant lesions occurring more frequently with older age. Since dysplastic or malignant changes may occur on a pterygium, histological evaluation is necessary in any pterygia like lesion.

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