INTRODUCTION

The conjunctiva is readily visible and partially exposed to sunlight; therefore, conjunctival tumors and related lesions are recognizable early in their course.[1]

Conjunctival tumors, based on their origin, are categorized into melanocytic and non-melanocytic types, both arising from epithelial and stromal components.[2] Conjunctival epithelial lesions vary from benign tumors such as papillomas, to malignant lesions such as squamous cell carcinoma (SCC).[3] Melanocytic and non-melanocytic tumors have been reported to comprise 53 and 47% of all excised conjunctival tumors, respectively.[2]

Ocular surface squamous neoplasia (OSSN) are composed of epithelial lesions such as dysplasia, carcinoma in situ and SCC which involve the conjunctiva.
and cornea. Main factors associated with conjunctival epithelial lesions include sunlight exposure, human papilloma virus (HPV) subtypes 6, 11, 16, 18, and human immunodeficiency (HIV) infection. Other factors associated with OSSN are old age, male sex and fair skin. According to Newton et al 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.

Although, a previous study was conducted at Farabi Eye Hospital, a referral ophthalmology center in Iran, there is no information about the frequency of conjunctival lesions in other parts of Iran with different amounts of sun exposure. The current study was conducted to identify the prevalence of various types of conjunctival lesions at the pathology department of Khalili Hospital, Shiraz, Fars Province (a tertiary care referral center located in the south of Iran). It has a homogenous rural population composed of inhabitants (with a low immigration rate) with more intense and longer duration of sun exposure as compared to other parts the country.

**METHODS**

After obtaining permission from the Ethics Committee of the Pathology Department of Shiraz University of Medical Sciences, Iran, in a retrospective study, the histology slides and database of conjunctival specimens submitted to Khalili Hospital, Shiraz, Fars Province, Iran, between April 2009 and July 2013 were reviewed by three pathologists. The histologic diagnoses were categorized into three groups of benign, premalignant and malignant lesions according to the World Health Organization (WHO) classification of conjunctival tumors. The prevalence of various types of conjunctival lesions was calculated and associations between conjunctival lesions and demographic data were analyzed by SPSS version 17 (SPSS corporation, Chicago, IL, USA).

**RESULTS**

A total of 631 conjunctival specimens from 628 patients were analyzed. Patient age ranged from 2 to 88 (mean 45.7 ± 19.0) years and there was no sex predilection (50.7% of cases were female). Out of 631 specimens, 516 (81.8%) were categorized as benign, 68 (10.8%) as premalignant, and 47 (7.4%) as malignant lesions. Melanocytic lesions comprised (13.3%) of all excised lesions and included nevi, primary acquired melanosis (PAM) and malignant melanoma in 12.5%, 0.4% and 0.4% of cases, respectively. Data for the three types of conjunctival lesions are detailed in Table 1.

**Table 1. Classification and frequency of conjunctival lesions**

| Lesions                          | Total frequency (%) | Percentage in groups | Mean age (year) |
|----------------------------------|---------------------|----------------------|-----------------|
| Benign                           | 516 (81.8)          |                      | 43.7            |
| Pterygium                        | 357 (56.6)          | 69.2                 |                 |
| Melanocytic                      | 79 (12.5)           | 15.3                 |                 |
| Conjunctival cyst                | 21 (3)              | 4.1                  |                 |
| Pyogenic granuloma               | 10 (1.6)            | 1.9                  |                 |
| BLFH*                            | 9 (1.4)             | 1.7                  |                 |
| Dermoid and dermolipoma          | 9 (1.4)             | 1.7                  |                 |
| Epithelial hyperplasia           | 8 (1.3)             | 1.6                  |                 |
| Squamous papilloma               | 6 (1)               | 1.2                  |                 |
| Hemangioma                       | 5 (0.8)             | 1                    |                 |
| Fibroma                          | 2 (0.3)             | 0.4                  |                 |
| Others                           | 10 (1.7)            | 1.9                  |                 |
| Premalignant                     | 68 (10.8)           |                      | 53.9            |
| CIN (I, II, III)*                | 64 (10.2)           | 94.1                 |                 |
| PAM†                            | 3 (0.4)             | 4.4                  |                 |
| Actinic keratosis                | 1 (0.2)             | 1.5                  |                 |
| Malignant                        | 47 (7.4)            |                      | 56.0            |
| SCC*                            | 44 (7)              | 93.6                 |                 |
| Malignant melanoma               | 3 (0.4)             | 6.4                  |                 |
| Total                            | 631 (100)           | 100                  |                 |

*BLFH, benign lymphoid follicular hyperplasia; CIN, conjunctival intraepithelial neoplasia; PAM, primary acquired melanosis; SCC, squamous cell carcinoma

Pterygia were the most common benign lesions (69.2%) and were combined with cysts and nevi in 2.3% of cases. Melanocytic lesions such as nevi and lentigo were the second most common benign lesions (15.3%) followed by conjunctival cysts (4.1%). 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. PAM and actinic keratosis were the second (4.4%) and third (1.5%) 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

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 and changes may occur on a pterygium, histological frequently with older age. Since dysplastic or malignant 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 pterygium like lesion.

In summary, benign lesions were the most common conjunctival lesions in all age groups in the current series, and 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 pterygium like lesion.

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Conflicts of Interest
There are no conflicts of interest.

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