Original Article

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Ocular Surface Squamous Neoplasia (OSSN): A Retrospective Study

Ophthalmology Section

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ABSTRACT

Background: Ocular surface squamous neoplasia (OSSN) is a term used to describe neoplastic epithelial abnormalities of conjunctiva and cornea, ranging from Squamous Dysplasia to Invasive Squamous Cell Carcinoma. In recent times, the incidence of OSSN seems to be on the rise, especially in developing countries like India.

Aim: To analyse demographic characteristics and compare the clinical presentation, treatment outcomes, and histopathology features of Ocular Surface Squamous Neoplasia (OSSN).

Design: Retrospective cross-sectional study.

Materials and Methods: We analysed 113 cases of OSSN who presented to the out-patient department of Sarojini Devi Eye Hospital, Regional Institute of Ophthalmology over a period of three years from February 2012 to January 2015.

Results: In patients, who presented with OSSN age ranged from 18 to 78 years, mean age being 45.20 years. Males were predominantly affected accounting for 65.48%. A nodule at the limbus is the commonest presentation. About 23% of the patients tested positive for HIV in whom mean age of presentation was 34 years. Among HIV positive patients 78.26% had SCC.

Conclusion: Increased incidence of OSSN was observed in males and people with outdoor occupations. Nodular type of lesion is the commonest variety. HIV positive individuals have an increased incidence of OSSN with invasive characteristics. Hence, ophthalmologists need to be aware of this association and a thorough workup is warranted for all patients presenting with OSSN, especially in the younger age group. Our study Also suggests that OSSN may be the first manifestation of underlying HIV infection.

Keywords: Conjunctival neoplasms, Human immunodeficiency virus (HIV) manifestations, Mitomycin-C(MMC), Carcinoma in-situ(CIS), Squamous cell carcinoma (SCC)

INTRODUCTION

OSSN is an encompassing term for pre-cancerous and cancerous epithelial lesions of the conjunctiva and cornea. It includes the spectrum of Dysplasia, Carcinoma in-situ (CIS) and Invasive SCC [1-3].

CIS accounts for 39% of all premalignant and malignant lesions of the conjunctiva and incidence of invasive SCC varies from 0.02 to 3.5 per 1,00,000 population [4]. About 75% occur in men, 75% are diagnosed in older patients, 75% occur at the limbus [5,6].

OSSN is mostly unilateral and is seen in middle age and older patients. Rarely, it is bilateral in immunocompromised patients. Factors associated with the development of OSSN are exposure to sunlight, HPV type 16 infections and HIV infection [2,5]. A systemic association of the development of OSSN is Xeroderma Pigmentosum. Other factors associated are old age, heavy cigarette smoking, male sex and people of light complexion.

There are no consistent clinical criteria for distinguishing CIS from invasive SCC. The presence of feeder vessels, intrinsic vascularity and a nodular lesion raise suspicion of invasive SCC. OSSN usually presents either as a fleshy, gelatinous, elevated lesion or as a sessile, papillomatous lesion mostly in the interpalpebral region. Most often vision is not affected unless the lesion is encroaching onto the pupillary area. OSSN patients usually present with a swelling, redness and irritation and one can see large, dilated vessels (feeder vessels) surrounding the lesion [1,2,5,7,8].

Advanced cases can infiltrate the cornea and sclera [9] and rarely the tumour may extend into the orbit causing proptosis.

Complete surgical excision with 4mm margin clearance without touching the tumour called the 'NO TOUCH TECHNIQUE' is the treatment of choice [1,10,11]. A double freeze-thaw cycle of Cryotherapy is applied to the edges of the bulbar conjunctiva and if sclera involvement is suspected, cryo is applied to the bare sclera as well [8].

Reported recurrence rate of OSSN is 15-52%. Lee and Herst reported a 17% recurrence after excision of conjunctival dysplasia, 40% after excision of CIS and 30% for SCC of conjunctiva [2]. The recurrence rate can be limited to less than 5% with the above technique. OSSN has a good prognosis. With the modern techniques the recurrence rate is about 5% and regional metastasis of 2% [1,5,12,13].

STUDY DESIGN

A retrospective cross-section study was conducted on patients presenting to the out-patient department of Oculoplastics and Orbital diseases in Sarojini Devi eye hospital, Hyderabad over a period of 3 years from February 2012 to January 2015.

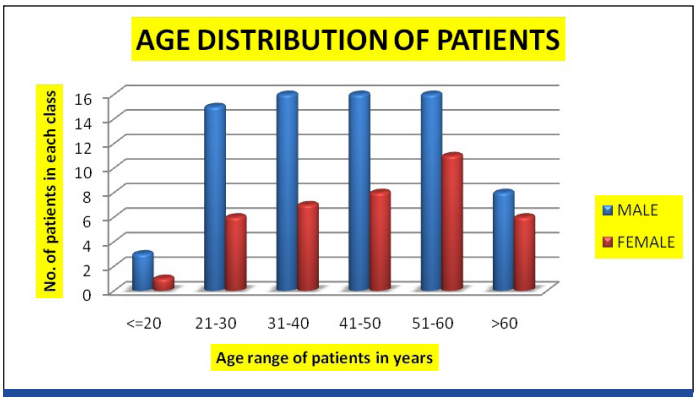
MATERIALS AND METHODS

We analysed 113 subjects who were suspected clinically to have OSSN and included them in the study. A detailed history including demographic data of Age, Sex, Occupation, HIV status of all the patients was obtained. Clinical features regarding the type of lesion, location, involvement of cornea were evaluated. Routine investigations like Hb%, CT, BT and HIV test were done after obtaining informed consent of the subjects. After subjecting the lesion for impression cytology, the lesion was excised with a 4mm margin clearance. Cryotherapy was applied to the bare sclera using double freeze-thaw technique. The excised specimen was sent for histopathology examination.

We have excluded 20 cases from further analysis in whom histopathology had revealed a normal epithelium. The rest 113 histopathologically proven cases of OSSN were analysed further.

STATISTICAL ANALYSIS

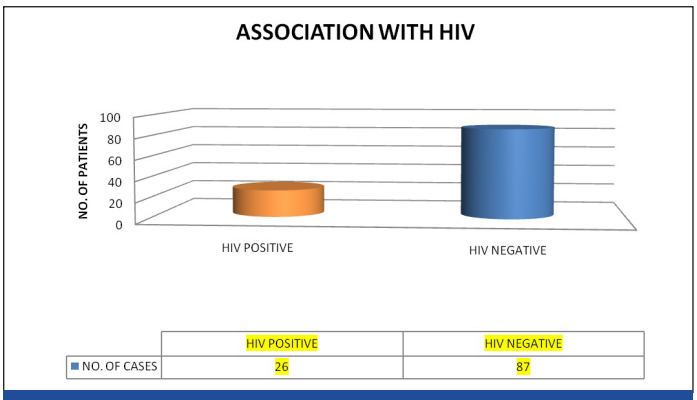
All the data entered into an Excel sheet were analysed and the data tabulated under various clinicopathological headings. A Chi-square test was used for statistical analysis and a p-value of less than 0.05 was considered significant.



[Table/Fig-1]: Age distribution of patients
AGE RANGE of patients in this study= 18–78 Years
Mean age = 45.20 Years

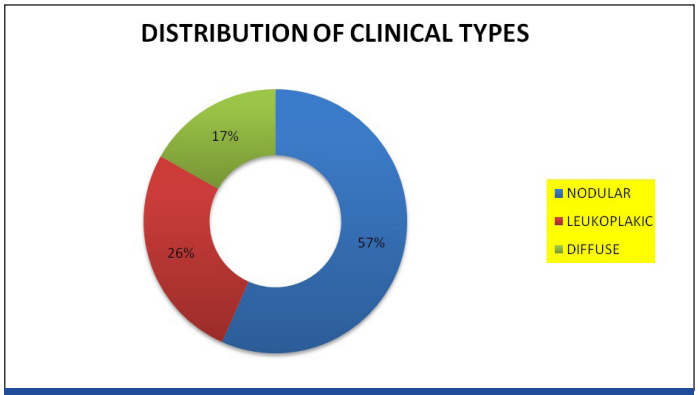
PARAMETER	<40 YEARS AGE	>40 YEARS AGE	p-value
Gender			
MALE	34	40	0.30426
FEMALE	14	25	
Pathology			
NON INVASIVE (mild, moderate, severe dysplasia and CIS)	36	37	0.14288
INVASIVE	14	26	
HIV status			
HIV POSITIVE	20	6	0.00005133
HIV NEGATIVE	28	59	
	HIV POSITIVE	HIV NEGATIVE	p-value
Pathology			
NON INVASIVE (mild, moderate, severe dysplasia and CIS)	8	65	0.00003932
INVASIVE	18	22	

[Table/Fig-2]: Statistical data showing significance of association of age with other clinicopathological findings

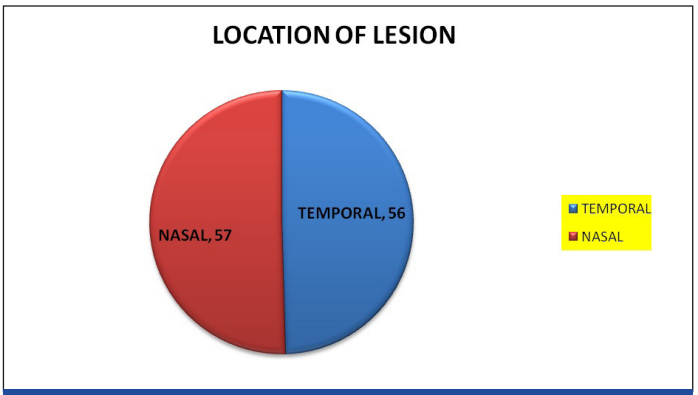


[Table/Fig-3]: Association of HIV

[Table/Fig-4]: OSSN in hiv positive patient



[Table/Fig-5]: Distribution of clinical types



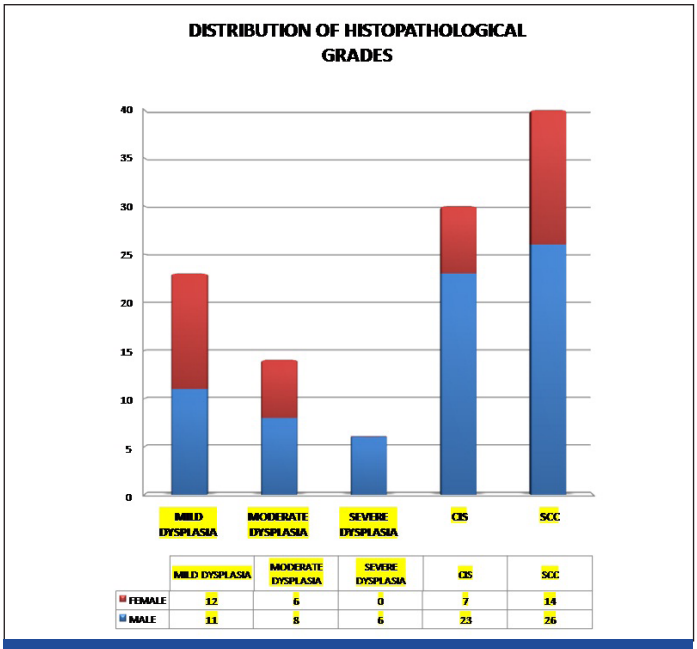
[Table/Fig-6]: Location of lesion

[Table/Fig-7]: OSSN on nasal side

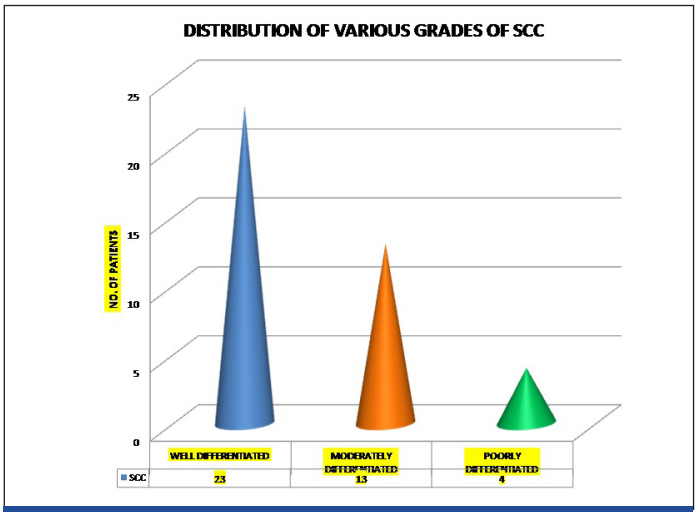
RESULTS

The age range of the patients in this study is 18 to 78 years. In our study, 65.48% of those affected were males. Mean age was 45.20 years [Table/Fig-1]. There was no statistical significance of susceptibility to OSSN in people less than 40 years of age. (p-value=0.3042) [Table/Fig-2]. In our study 23% of the patients were positive for HIV and 77% tested negative [Table/Fig-3]. Of those who tested positive 5 out of 26 (19.23%) were found to have HIV after they presented with OSSN. Mean age among HIV positive individuals was 34 years. Statistical analysis showed a significant association between a young patient with OSSN and HIV status (p-value=0.00005133) [Table/Fig-2]. This necessitates testing for the presence of HIV in any young patient presenting with OSSN [Table/Fig-4].

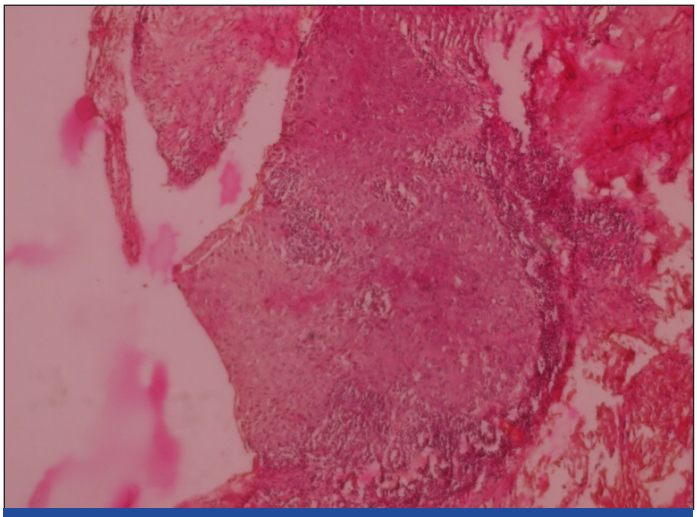
The most common clinical variety noted was the Nodular type in 56.63% followed by Leukoplakic in 26.54% [Table/Fig-5]. In our study, 57 patients had nasal lesions accounting for 50.44% and



[Table/Fig-8]: Distribution of histopathological grades



[Table/Fig-9]: Distribution of various grades of SCC

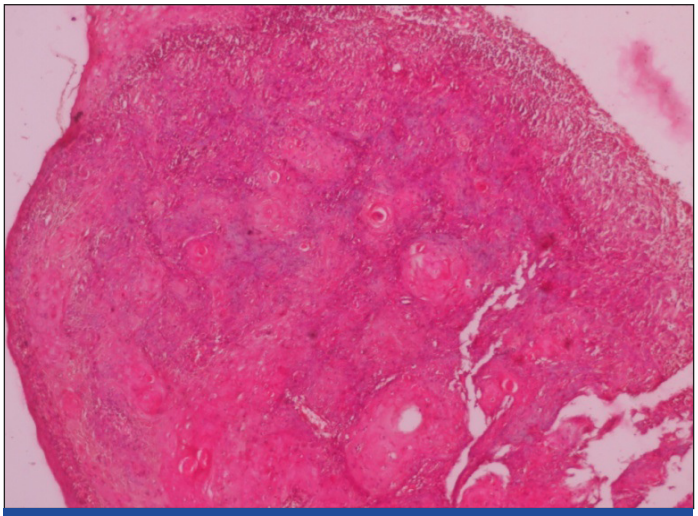


[Table/Fig-10]: Carcinoma in-situ (CIS)

56 patients had temporal lesions accounting for 49.56% [Table/Fig-6&7].

In our study, Histopathological examination showed SCC in 40 patients (35.39%), Carcinoma in-situ in 30 (26.5%) and Mild to severe dysplasia in 43(38.05%) [Table/Fig-8].

In those with SCC, well-differentiated SCC is accounting for 57.5% of cases and poorly differentiated for 10% of cases of SCC [Table/Fig-9-11].



[Table/Fig-11]: Well differentiated SCC

DISCUSSION

The age range of the patients in this study is 18 to 78 years and the mean age was 45.20 years. Mean age among HIV positive individuals was 34 years which necessitates testing for the presence of HIV in any young patient presenting with OSSN. Statistical analysis showed a significant association between a young patient with OSSN and HIV status (p-value=0.00005133) [Table/Fig-2].

In our study, 65.48% of those affected were Males. This observation is also mentioned in other studies where males outnumbered females. Male gender may be a risk factor for higher preponderance as they are more commonly employed in professions involving outdoor work thereby leading to increased exposure to UV-B rays which is a known risk factor for development of OSSN. In a similar study done by Rohit Bang et al.,, the nodular variant was reported to be as high as 48% [14]. In this study 50.44% of the lesions are on the nasal side. According to a study done at Bascom Palmer Eye Institute 54% presented with nasal lesions [15].

In our study, 23% of the patients were positive for HIV and 77% tested negative. Mean age among HIV positive individuals was 34 years. Statistical analysis showed a significant association between a young patient with OSSN and HIV status (p-value=0.00005133) [Table/Fig-2]. Out of 26 HIV positive cases 78.26% had SCC thereby indicating that HIV patients have a more aggressive form of OSSN Compared to HIV negative patients [16,17] which is shown by a significant statistical analysis with a p-value of 0.000039322 [Table/Fig-2]. In a study done by Tanuja G et al., the mean age in HIV positive OSSN patients was 36 years and 29% of the patients with OSSN were HIV positive and OSSN was the only detectable manifestation of Underlying HIV infection [18].

In another study conducted in Malawi by Spitzer MS et al., which looked at the prevalence of HIV in patients with OSSN and found invasive disease In HIV positive cases [19].

All the patients were subjected for surgical excision of the lesion with a 4mm margin clearance and the specimen sent for histopathological examination which is the gold standard for the diagnosis of OSSN. Those having SCC and CIS were kept on 0.04% topical Mitomucin-C (MMC) for 4 times a day (qid), 4 days in a week for 4 cycles.

CONCLUSION

Increased incidence of OSSN was observed in males and people with outdoor occupations. Nodular type of lesion is the commonest variety. HIV positive individuals have an increased incidence of OSSN with invasive characteristics.

Hence, ophthalmologists need to be aware of this association and a thorough workup is warranted for all patients presenting with OSSN, especially in the younger age group.

Our study also suggests that OSSN may be the first manifestation of underlying HIV infection.

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