

Ocular Surface Squamous Neoplasia - A Clinical Study

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Abstract: ***Aim:** To analyse the demographic distribution and the various clinical presentation, treatment outcomes and histopathological features of OSSN. **Methods:** Study conducted at tertiary eye care centre from DEC 2014 TO JUNE 2016 on 25 patients with clinical features suggestive of OSSN. All patients underwent excision biopsy with cryotherapy. **Results:** 25 cases were proven as OSSN on HPE. Most common age group 30 -50 years. Left eye was involved in 52%of patients. Nasal quadrant was involved most commonly. Clinically gelatinous pattern seen in 48% of cases. On HPE dysplasias seen in 72% of cases. Excisional biopsy with cryotherapy was done. Complications include 1 case of SPK with conjunctival granuloma & a case of corneal thinning with iris prolapse and scleral thinning. Mean follow up period was 17 months. No recurrence was seen. **Conclusions:** OSSN most commonly found in males and outdoor workers. Most common presentation is mass followed by foreign body sensation. On HPE dysplasias seen in 72% of cases. Excisional biopsy with cryotherapy is associated with best control of primary OSSN with no tumour recurrence.*

Keywords: OSSN; Squamous cell carcinoma; Carcinoma in situ; Dysplasia

1. Introduction

Ocular Surface Squamous Neoplasia (OSSN), a term coined by Lee and Hirst, describes a spectrum of conjunctival and corneal epithelial neoplasia manifesting as dysplasia, carcinoma-in-situ and squamous cell carcinoma. Most commonly it arises in the limbal region, inter palpebral region occurring particularly in elderly (6-7decade) who have lived in geographic areas exposed to high levels of ultraviolet-B radiation, males are affected more than females and more in Caucasians, symptoms range from none to severe pain and visual loss [1].OSSN is considered an uncommon disease with geographic incidences which vary from 0.2 to 3.5 per 100,000 with greater frequency near the equator [2].

Risk factors for OSSN include-UV light exposure, HIV, HPV, cigarette smoking and fair skin [3].OSSN has been reported to masquerade as- chronic blepharoconjunctivitis [4], chronic conjunctivitis, cornealulcer, pterygium, necrotizing Scleritis and sclerokeratitis [5]. Histopathological evaluation is essential for the definitive diagnosis and also to differentiate the three lesions in the spectrum of OSSN *i.e.* epithelial dysplasia, carcinoma in situand invasive squamous cell carcinoma [6]. Treatment includes surgery- excisional biopsy with cryotherapy [7], chemotherapy with mitomycin-c [8] & 5 flourouracil [9], immunotherapy with interferon alpha 2 b[10], radiotherapy [11]

2. Materials and Methods

A prospective hospital based study conducted at tertiary eye care center in Govt. Regional Eye Hospital, AMC, Visakhapatnam from December 2014 to June 2016,histopathological confirmation done by consultant pathologist. Ethical clearance was obtained from the Ethics Committee prior to commencement of study. After satisfying inclusion, exclusion criteria total 25 patient were

included in the study. Nature and intention of the study was fully explained to the study participants in details before commencement of study.

Inclusion Criteria: (1) Cases suspected clinically to have ossn (2) Who are above the age of 20 years.

Exclusion Criteria: (1) Patients with no other known ocular pathology (2) Who are not willing to participate in the study.

Demographic data including age, sex, occupation and detailed history were obtained, ocular examination for location, extent, clinical appearance of lesion by slit lamp,patients who had sessile, fleshy, papillomatous, elevated lesion, frosted epithelium over peripheral corneal surface adjacent to limbal lesions, pigmented lesions and dilated feeder vessels were selected

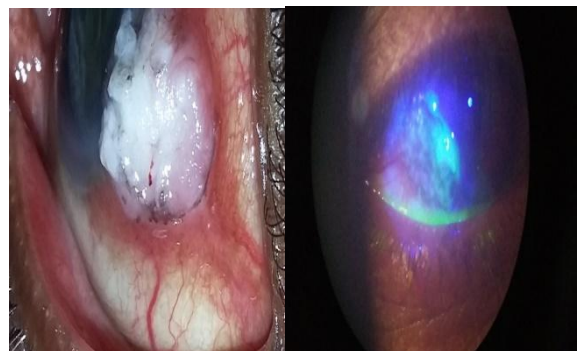


Figure 1 & 2: Showing vascular fleshy mass with feeder vessels in a case of OSSN

Visual acuity, photographic documentation of the lesion, refraction, fundus examination were done. Urinealbumin & sugar, IOP, Syringing, BP, XST, haematological investigations Hb, TC, DC, BT, CT, ESR, fluoresce in stain and Rose Bengal stain, Viral markers –HIV were done.Treatment for OSSN could be medical and surgical.

A MOH'S TECHNIQUE given by bunn's et al was followed in this study. Minimal or no touch technique was followed during surgery. All patients were given peribulbar anesthesia by the operating surgeon only. Initially Rose bengal staining was done to aid the delineation of the extent of abnormal tissue. Alcohol keratoepitheliectomy- cornea is meticulously dried and a cotton-tipped applicator saturated with absolute alcohol is applied beyond the visible tumor margin and over 2-3 mm of normal epithelium after that thorough wash was given. A 15 no Bard Parker blade is used to gently peel the epithelium of the cornea including 2-3 mm of normal epithelium like a scroll taking care not to breach the Bowman's membrane. After that conjunctival portion of the tumor with 4 mm of the normal tissue was excised along with the underlying tenon's fascia with minimal and no touch technique. Adjuvant cryotherapy is done for all cases. In this study double freeze-slow thaw technique was followed. The conjunctiva is lifted up and the tip of the cryo-probe is touched to posterior conjunctival surface, which minimizes accidental damage to the uvea and retina.

After that Surgical site was left open which epithelized within 7-10 days. Small defects were left to granulate which healed within few days and large defects were repaired with conjunctival autograft and amniotic membrane grafting. Excised tissue sent for histopathology in 10% formaline solution.

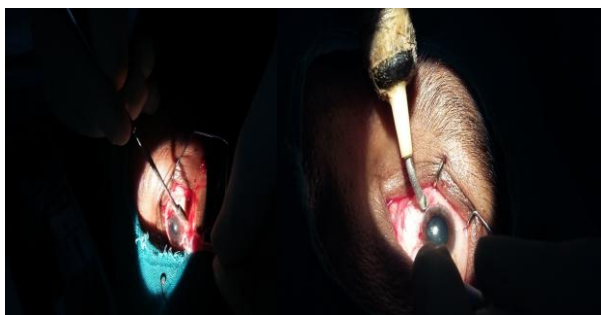


Figure 3 & 4: Intraop excision and cryotherapy

All histopathology samples were examined by single pathologist. For the purpose of study all slides were again cross checked by another pathologist. Post operative medications include Moxifloxacin and Dexamethasone combination eye drops 4 times a day for first 2 weeks followed by 2 times a day for next 2 weeks. Tear plus eye drops 0.5% given for 4 times a day for 3-4 months, homide eye drops. All patients were followed up post operatively on day 1, 7, 14 days, 3 months, 6 monthly upto 1 year till completion of the study

3. Results

We encountered 0.08% prevalence of OSSN in our study (25 cases out of 30,100 total OPD). Out of 25 cases 13 are males (52%) and 12 are females (48%) with a male predominance. M:F ratio is 1.083:1. Age range of the patients was from 20-70 years with the mean age of presentation is 44.16 yrs.

Table 1: Age Wise Gender Distribution

Age Range	Number of Males	Number of Females	Total (Percentage)
11-20 yrs	0	0	0
21-30 yrs	3	1	4(16%)
31-40 yrs	4	3	7(28%)
41-50 yrs	4	3	7(28%)
51-60 yrs	2	3	5(20%)
61-70 yrs	0	2	2(8%)

Table 2: Clock Hours of Involvement

Clock Hours	Number	Percentage
1-3 Clock	14	56%
3-6 Clock	9	36%
>6 Clock	2	8%

Table 3: Ocular Symptomology

Symptoms	Frequency	Percentage
Growth	25	100%
Redness	25	100%
Pain	17	68%
Foreignbody Sensation	21	84%
Watering	13	52%
Pigmentation	5	20%
Feeder Vessels	23	92%
Cornea Involvement.	21	84%

Table 4: Risk Factors

Risk Factors	Males	Females	Total
Sun Exposure	13	12	25(100%)
Smoking	7	1	8(32%)
Previous Ocular Surgery/ Trauma	1	1	2(4%)
Systemic Diseases (HIV/HBSAG)	3(HIV) 1(HBSAG)	1(HIV)	5(20%)

Most common risk factor for developing OSSN was exposure to bright sun light in persons working in outdoor occupation for more than 50% of time in initial 5-6 years of exposure. All of them are outdoor workers. Mean duration of exposure to bright sun light was 14.76 years, mean duration of hours of exposure to bright light per day was 5.72 hours /day. HIV is also been noted as a risk factor for the development of ossn, in our study it was seen associated with 4(16%) cases. Risk factors like HPV, exposure to chemical & petroleum products, xerodermapigmentosa were are not seen in this present study. LE affected in 13(52%) cases, RE affected in 12(48%) cases. Nasalgrowth were seen in 16(64%) cases, temporal growth was seen in 9(36%) cases. It confirms the vulnerability of the limbus mainly on the nasal side. All the patients had unilateral involvement of eye 25(100%).

Table 5: Morphology of OSSN

Type	Number of Cases
Gelatinous	12(48%)
Papillomatous	3(12%)
Leukoplakic	10(40%)

Excision and Cryotherapy was done in all patients. The defect created by excision was closed by AMG and conjunctivolimbal autograft. Maximum 18(72%) cases had histopathological diagnosis of Dysplasias followed by SCC 5(20%) and CIS 2(8%). The follow up period ranged from 12 to 24 months. Out of 25 cases complications were seen in 2(8%) cases in 1 case SPK & Granuloma at surgical site and

other case Iris prolapse at 7-8 clock position and sclera thinning at 7-9 clock position, We did not find any recurrence in our study.

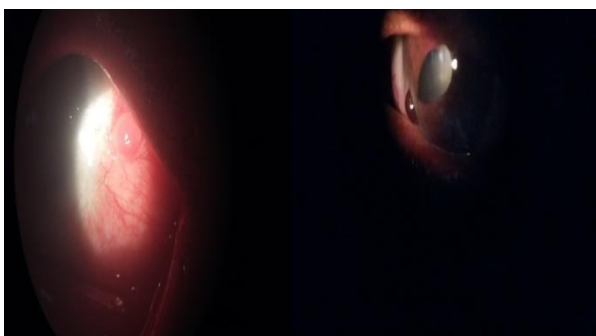


Figure 5 & 6: Complications conjunctival Granuloma and iris prolapse

Table 6: Histopathology of OSSN

Mild Dysplasia	8(32%)
Moderate	6(24%)
Severe	4(16%)
Carcinoma Insitu	2(8%)
Squamous Cell Carcinoma	5(20%)

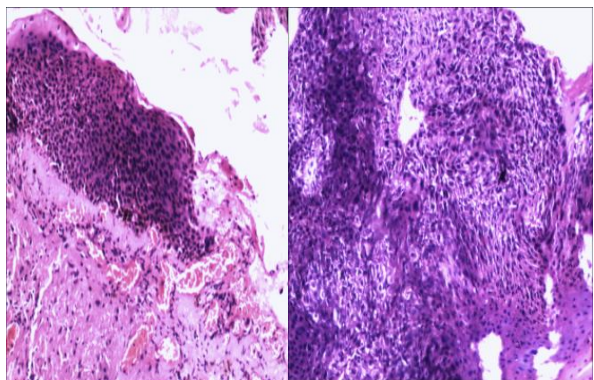


Figure 7 & 8: Severe Dysplasia and SCC

4. Discussion

In the present study males accounting for 13 (52%), females 12(48%).In Lee et al (12) study males accounting for 226(78.5%), females accounting for 62(21.5%).It is mostly related to professioninvolving outdoor activity thereby increased UV-B exposure.;In this present studyLE was involved in 13 (52%) patients,RE was involved in 12 (48%) patients, Nasal limbus involved in 16 (64%)Cases,Temporal limbus involved in 9(36%)cases. Oluyemi et al (13)study on 25 patients LE was involved in 14(56%), RE was involved in 11(44%), nasal limbus was involved in 11(44%) cases, temporal limbus was involved in 8(32%).Clinical appearance of growth was gelatinous in 12(48%), papillomatous 3(12%), leukoplakic 10(40%). Tunc et al (14) study gelatinous growth seen in 11(50%)cases, leukoplakic growth seen in 9(41%) cases in intraepithelial type of lesion. In this present study Dysplasias accounting for 18(72%), CIS seen in 2(8%) case, ISCC seen in 5(20%) cases. In Clear et al (15)study on 216 patients, Dysplasias seen in 145 (67.13%), CIS seen 21(9.73%), ISCC seen in 50 (23.14%) patients. 25 patients are treated with excisional biopsy with adjuvant cryotherapy.Longest period of follow up was 17 months.Shortest follow up period was 3 months.No

recurrence was documented in our study. In Gupta et(16) al. study found no recurrence

5. Conclusions

Our study is a prospective, observational study. It included 25 patients out of which 25 were histopathologically diagnosed as OSSN after excisional biopsy. We encountered 0.08% period prevalence of OSSN in our study.Males are more prone for OSSN and the Average age range of the patients is 20-70 years. Nasal quadrant is most common involved with limbus being most common location. Most common presentation is growth followed by redness.

Most common risk factors are sun exposure(100%)and immunocompromised patients(HIV-16%). Dysplasias are most common histopathological diagnosis. Surgical excision and cryotherapy is associated with best control of primary OSSN with no tumour recurrence. Complications are present in 2(8%) cases. In spite of easy availability of ophthalmic services still many people are presenting late due to lack of awareness about significance of early diagnosis and its management.The community including ophthalmologist, medical practitioners, paramedical health workers should be educated about OSSN for early diagnosis and treatment.

6. Limitations

Study sample was small. Duration of Study is Less.Follow-up period is short.All Treatment modalities are not used in this present study.

Continuation of the study for a longer period is recommended so that there will be large sample size. Then it will be possible to analyse post op complications, recurrence and various treatment modalities.

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