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Clinical Study of Histologically Proven Various Conjunctival Cysts

Dr. Shreya Thatte, Dr. Jagriti Jain

Conjunctival cysts are thin walled and slowly progressing cysts. They are usually symptomless but can cause cosmetic disfigurement, reduced motility, foreign body sensation, dry eye due to unstable tear film when they increase in size. They can be primary or secondary inclusion cysts. Primary cysts are congenital, which remains hidden in fornix and gradually increases with age. Secondary cyst can be parasitic cyst, implantation cyst due to trauma and degenerative cyst.\textsuperscript{1,2,3} Remedy for cyst is complete excision. As the cysts are thin walled, rupture is common during excision. Recurrence is the main postoperative concern. Careful and intact removal of cyst is necessary to prevent recurrence.

MATERIALS AND METHODS

This is a retrospective study of 40 cases of conjunctival cyst attending ophthalmology OPD between March 2007 to April 2013. A thorough work up which included a detailed history, visual acuity and ocular motility testing, slit lamp and fundus examination was performed in all the patients. All patients underwent basic haematological work up, B-scan USG and MRI of cyst was done whenever required to see the posterior extent. A careful surgical excision was done in a non-traumatic method. All excised cyst were subjected to histo-logical examination to confirm the diagnosis.

Single cyst (more than 3 mm size) could be excised with careful dissection without rupture. Majority of the cases were managed by simple dissection under sub-conjunctival anaesthesia. Only one case with hydatid cyst who required lateral orbitotomy was operated under general anaesthesia. During excision conjunctiva along with tenon’s was held with non-traumatic forceps gently above the cyst, a small incision was given and blunt tipped of scissors introduced between cyst and tenon’s to separate the cyst from surrounding tissue. Conjunctiva above the cyst was left as such, which helped to hold the cyst firmly during blunt dissection. Care was taken to keep the tip of the corneal scissors away from the cyst. After separating the cyst from all sides, its base was dissected carefully, as base of the cyst...
ruptures most commonly during the dissection. Conjunctiva above the cyst was pulled in the opposite direction of the dissection area, so that fibrous attachments at the base of the cyst were stretched and became easily visible which helped in intact cyst removal.

In one patient of large hydatid cyst lateral orbitotomy was required for complete excision. Patients with parasitic cysts were treated with anti-helminthic therapy following the excision.

Cysts smaller than 3mm size and multiple small cysts were removed along with subconjunctival tissue. Cysts with pterygium were excised along with pterygium tissue. Reverse peeling of pterygium was performed in all patients to avoid rupture of cyst, which were particularly located at the head of pterygium. In reverse peeling, body of pterygium was cut near canthus and reflected back on cornea, then it was peeled off by holding pterygium tissue near limbus. Small lymphatic cysts which were difficult to excise were removed along with the adjoining conjunctiva and tenon’s.

All the patient were followed up for a minimum period of 1 year of surgery for the recurrence and development of any complications.

**Observations**

A total of 40 patients with conjunctival cysts were studied. Of these 12 patients had primary inclusion conjunctival cysts, 28 patients had secondary inclusion cysts, out of which 4 patients developed conjunctival cyst following SICS, 2 patients had post traumatic cyst, 15 patients had cyst in pterygium, 4 patients had parasitic cyst, 2 patients had lymphatic cyst and 1 patient had an orbital cyst with rudimentary eye.

Common symptoms that were noted in these patients were progressive increase in size of cyst (39.45%), cosmetic disfigurement (26.23%), foreign body sensation (27.86%), proptosis (1.6%), ocular motility restriction (3.2%) and blurred vision (1.6%).More than one symptom were also noted in many patients.

The age group of 12 patients with primary inclusion cysts were ranged from 18-45 years with size of these cyst between 10-25 mm. Cyst was noted in early childhood in all 12 patients which progressed in size to cause various symptoms, and there was no history of trauma or ocular surgery in any of the patient. The cysts were typically located in the supero-nasal part of orbit in 10 patients and in 2 patients it was located temporally, which was not a common site. In one young female patient the cyst was large (nearly 25 mm), temporally located, the cyst in this patient was big enough to cause ocular motility restriction during abduction. In another young female with nasal primary cyst we noted a capillary haemangioma on temporal side of contralateral forehead.
Complete removal of primary cyst was possible in all cases, cysts were found to be free from surrounding tissues. Complication in form of minor fat prolapse during dissection was noted in one patient while no intraoperative or post-operative complications were noted in other patients. Histopathology showed cyst lined with single layer of stratified squamous epithelium containing amorphous material.

Conjunctival cyst following SICS was observed in 4 patients. In one patient cyst was 6x8 mm located at 10 O’clock limbus, in second patient it was 7x6 mm at 12 O clock position. In other two patients cysts were small nearly 5x5 mm and located at 12 O clock position at limbus. Complete excision of cyst was possible in all the cases. Histopathology of excised cyst showed conjunctival cyst lined by stratified squamous epithelium filled with amorphous material inside.

Of the two 2 cases of post traumatic conjunctival cyst, one was present temporally near the lateral canthus, it resulted a month after lateral canthus tear repair. Second patient with post traumatic cyst had surgery for repair of medial canthus nearly 6 months back, the cyst was located near the lower canaliculus. In both the cases cysts were nearly 5x5 mm in size, both the cysts were excised completely and histopathology showed cyst lined by stratified squamous epithelium filled with proteinaceous material.

Pterygium with cyst were seen in 15 patients. In 10 patients cyst was located at the head of pterygium, while in rest 5 cases it was embedded in the body. There was no adherence of cyst to the underlying structures in any of the patient. These cases were managed by excision of cyst along with the pterygium. Reverse peeling of pterygium was done to avoid rupture of cyst, particularly for the cysts located at the head of pterygium. Histopathology showed pterygium with stratified squamous epithelium lining with cystic changes, mild chronic inflammatory reaction was seen around the cyst.

All 4 patients of parasitic cyst were young male. The largest of parasitic cyst was a hydatid cyst measuring 29X24 mm which was located retro-orbitally in temporal orbit, causing proptosis, a swelling on temporal conjunctiva near lateral canthus, esotropia, limitation of abduction and blurred vision on the affected side. The cyst was actually pressing the eyeball which resulted in a vertically elongated optic disc. Cyst excision was performed by lateral orbitotomy, wound was irrigated with hypertonic saline to prevent recurrence and toxic reaction from accidental spillage of cyst contents. The other three of parasitic cysts were medium sized (8-10 mm in diameter), located in superior fornix. Progressive increase in the size of cyst was the only complaint in these patients. Surgical excision was performed in all cases. Histopathology showed conjunctival cyst with embedded parasite showing features of cysticercous cellulosae. There was chronic inflammatory cell
infiltrate with lymphocytes, eosinophils and giant cells in cyst wall.

Conjunctival lymphatic cyst were seen in two male middle aged patients. In both patients cyst located inferiorly on the bulbar surface near the fornix. In first patient the larger cyst was 3x3 mm, associated with multiple horizontally oval small cysts, it was managed by excision of the larger cyst and resection of subconjunctival tissue in area of smaller cysts. The second patient had multiple small (1x1 mm) cyst, which were removed by resection of entire subconjunctival tissue in affected area.

In one patient who was a one and a half year old female child a progressively increasing 1.5X1.5 inch swelling was seen in orbit which was bulging through the lower lid. MRI showed absence of eye ball in the orbit. While excision the base of cyst was found to be firmly adherent to base of orbit from where it got ruptured during separation. It was diagnosed as congenital cyst with anophthalmos. The histopathology revealed a unilocular cyst with its wall showing neural tissue.

**DISCUSSION**

After reviewing the literatures, we did not find much work on conjunctival cysts. Apart from the study done by Nath et al. we did not come across any study where clinical presentation and histopathology of various types of conjunctival cysts were studied. In study done by Nath et al. 45 conjunctival cysts were surgically treated and histologically examined.

Inclusion cysts are benign cysts filled with clear serous fluid containing shed cells or gelatinous mucous material. Cysts wall consists of several layers of non-keratinised lining epithelium and connective tissue. 80% of entire cystic lesions of conjunctiva are inclusion cysts. They can be primary or secondary.

Most common location of primary orbital cyst is superonasal followed by superotemporal region where bone involvement has been described. 12 cases of primary inclusion cyst were seen in present study, cysts were typically located in the superonasal part in 10 cases which is the most common location for the primary inclusion cyst. However in two young females cyst was located in temporal quadrant, out of these one cyst was large enough to cause limitation of movements in abduction. Pathogenesis of primary inclusion cyst is due to excessive invagination of the caruncular epithelium or the fornix during embryonic development. Age of presentation of these cysts range from birth to 70 years, typical clinical features consists of painless cystic mass of small to moderate size. These cysts are mostly masses of thin walls and low pressure which generally do not induce significant mechanical alterations, however they can rarely erode adjacent bony structures and cause visual symptoms. Fj. Guijarro-
Oria reported a case of orbital giant conjunctival epithelial primary cyst of 3.5x2 cm in superior orbit which was removed by trans-conjunctival orbitotomy. In our study all the cysts were removed with intact walls without any requirement for orbitotomy.

Secondary inclusion cysts are more common, they occur either naturally or under inflammatory condition of conjunctiva. In most cases it is developed by detachment of a portion of conjunctival epithelium by surgery or trauma and even subtenon anesthesia and its following implantation into conjunctival epithelium. In present study cysts following small incision cataract surgery were seen in 4 patients. They were excised completely without rupture and histo-pathologically proven to be inclusion cyst. Narayanappa et al. reported 2 cases of inclusion cyst following SICS but the cyst got ruptured during the removal in both cases. Shreya Thatte et al. also reported 2 cases of conjunctival inclusion cyst following SICS, they were able to excise intact cyst in both cases. Chief differential diagnosis is filtering bleb. This complication occurs due to implantation of conjunctival tissue during construction of tunnel or dragging of conjunctiva during IOL implantation. This can be prevented by careful reflection of conjunctiva during surgery. Inclusion cysts have also been reported in conditions of chronic inflammation like VKC.

In present study 40 cases of conjunctival cysts were studied. The various types of cysts noted were primary (30%) and secondary (15%) inclusion cysts, pterygium associated cysts (37.5%), parasitic (10%), lymphatic (5%) and congenital cyst with anophthalmos (2.5%). In study by Nath et al. the types of cysts studied were epithelial inclusion cysts, dermoid cysts, parasitic cysts, lymphatic and pigmented cyst.

Cystic changes in pterygium were noted in 15 patients in our study. All cases were managed by excision of pterygium itself, the cysts were found to be free from underlying structures in all cases. Kapoor et al. reported two cases of pterygium with cystic degeneration. In one of their patient they performed surgical excision of pterygium along with cyst and studied it histologically which showed a cyst lined with stratified squamous epithelium with mild inflammatory reaction surrounding the cyst wall. They mentioned that these cysts are the result of cellular down growth following degenerative changes in stroma of pterygium. Cysts can be congenital when they are deep to pterygium and fixed to deeper structures.

4 cases of conjunctival cysts in our study were found to be parasitic, 3 of them were cysticercus while one was a hydatid cyst. After reviewing the literatures we could not find percentage of various types of parasitic conjunctival cyst, however parasitic conjunctival cyst due to cysticercus appear to be most common. In a study done on conjunctival cyst done by Nath et al., all the
parasitic cysts were found to be cysticercus cellulosae, all these cysts in their study were located nasally. Literature also states the medial side to be more commonly involved than lateral on account of anatomic course of the ophthalmic artery, while in our study all 3 cysticercus cyst were located superiorly. Conjunctival involvement in cysticercus is usually in the form of a painless or painful nodular subconjunctival mass with surrounding congestion\textsuperscript{13}, rarely a subconjunctival abscess or granuloma may form, spontaneous extrusion of cysts has also been reported.\textsuperscript{14} In our study a progressively growing mass was the only feature in all patients, no other ocular structure was found to be affected in any of the patient. Patients were managed by complete surgical excision followed by albendazole therapy in dose of 15 mg/kg/day in two divided dose for four weeks in tapering doses. Removal of cysticercus is the recommended treatment for subconjunctival space cysticercosis, as it gives excellent results.\textsuperscript{15,16} If cyst wall is accidentally opened, the content should be aspirated and the area irrigated with hypertonic saline.

One parasitic cyst was a hydatid cyst, it was large located retro-orbitally, causing proptosis, limitation of abduction and visual dysfunction which was removed after lateral orbitotomy. Hydatid cysts mostly occur in young people between 10-30 years. They most frequently present as exophthalmos, chemosis, lid oedema, visual impairment and restriction of extraocular movement.\textsuperscript{17,18} Sudden exacerbation of pain, increase in proptosis, and local inflammatory reaction in eye is important diagnostic clue to hydatid cyst.\textsuperscript{19} Definitive treatment is surgical excision.\textsuperscript{20,21}

Two cases of conjunctival cyst were diagnosed as lymphatic cyst in present study, both patients presented with foreign body sensations in the affected eye. The larger cyst was excised while resection of entire affected subconjunctival tissue was done for smaller, multiple cysts. There was no recurrence till one year follow up. Conjunctival lymphangiectasia are presumably caused by obstruction of lymphatic channels, but actual cause often remains unknown. They often resolve but sometimes swell and cause symptoms like foreign body sensation, irritation and dryness.\textsuperscript{22} They can present either as cystic lesions of conjunctiva which mimic allergic chemosis or as beaded dilatation of lymphatic vessels with string of pearl appearance. Treatment modalities for conjunctival lymphangiectasia are surgical resection, marsupialization,\textsuperscript{23-24} and obliteration of abnormal lymphatics by liquid nitrogen cryotherapy. A study done on 7 conjunctival lymphangiectasia showed surgical resection to be easy and effective with no recurrences.\textsuperscript{25} In another study 5 eyes of biopsy proven lymphangiectasia underwent liquid nitrogen cryotherapy. The study showed quick resolution of symptoms following cryotherapy, however there were 2 recurrences and average time for recurrence was found to be 18 months.\textsuperscript{26}
One patient was presented with an orbital cyst with anophthalmos, also known as congenital cystic eye. Congenital cystic eye results from failure of invagination of optic vesicle, a cyst of neuroectoderm remains which becomes clothed with fibrous tissue. The lining of cyst may remain as a single layer of neural tissue but more commonly shows some differentiation into retinal tissue with an ill-defined retina anteriorly while posteriorly the cells contain pigment and represent the pigment epithelium. Surgical excision is the most preferred method, aspiration of cyst is associated with high rate of recurrence, sclerosing therapy has also been tried with satisfactory results. We managed our case by surgical excision, however intact cyst removal was not possible due to adherence of cyst at base of orbit.

To summarise, the present study is a clinico-histological study of 40 cases of conjunctival cysts, all the patients were managed by surgical excision. An intact removal of cyst is very important to prevent recurrence. Majority of the cysts can be excised with intact walls by careful dissection and adopting minor modifications. Small cysts like lymphatic cyst can be managed by excision of adjoining subconjunctival tissue. Similarly cyst within the pterygium are managed by excision of pterygium along with it, Histo-pathologically all cysts were proved to be conjunctival cysts as they were lined by stratified squamous epithelium and filled with either amorphous or proteinaceous material or embedded parasite and in few cases surrounded by inflammatory cells or with neural tissue.

CONCLUSION
This is a clinico-histological study of 40 cases of different variety of conjunctival cysts which were histologically confirmed. All the cases were managed by surgical excision. Minor modifications helped us to excise majority of the cysts with intact walls which is very important to prevent recurrence.

Clinical Study of Primary Ocular Tuberculosis
Dr. Tanushree V., Dr. H T Venkategowda, Dr. H.T. Venkate Gowda

Tuberculosis (TB) is an infection caused by Mycobacterium tuberculosis, which can cause disease in multiple organs throughout the body, including the eye. The term “Primary Ocular Tuberculosis” describes an infection by the M. tuberculosis species that can affect any part of the eye.
(intraocular/extraocular) without any systemic manifestations. “Secondary ocular TB” is defined as ocular involvement as a result of seeding by hematogenous spread from a distant site or direct invasion by contiguous spread from adjacent structures, like the sinus or cranial cavity.

TB is an airborne communicable disease that most commonly involves the lungs. Nearly one third of the world’s population is latently infected with TB, and more than 9 million new cases are diagnosed each year, 95% in developing countries.

Ocular TB may not be associated with clinical evidence of pulmonary TB; up to 60% of patients with evidence of extrapulmonary TB may not have diagnosed pulmonary TB. Ocular TB may be an initial presentation of extrapulmonary dissemination of infection.

Posterior uveitis is the most common presentation of intraocular TB. The gold standard for diagnosing intraocular TB is demonstration of Mycobacterium tuberculosis from the intraocular fluid or tissues by microbiological or histopathological examination. The currently available laboratory methods provide an indirect evidence of tubercular etiology of uveitis. The diagnosis of intraocular TB still remains largely presumptive as the ocular tissue is rarely sampled. The use of specific clinical signs as markers predicting TB as the cause of uveitis in a TB endemic area has been recently reported. Definitive diagnosis of extraocular TB in a patient with uveitis also aids in diagnosing intraocular TB.

Intraocular TB has a wide clinical spectrum that may include uveitis, retinal vasculitis, serpiginouslike choroiditis, choroidal tubercles or granuloma, subretinal abscess, or panuveitis. The rare manifestations include endophthalmitis, panophthalmitis and neuroretinitis. Extraocular manifestations commonly in the lid and adnexa has also been described. Immuno compromised individuals may have atypical presentations like hypopyon uveitis, or endophthalmitis.

The aim of this study is to note the clinical manifestations in patients with primary ocular tuberculosis without any other systemic manifestations involved.

**MATERIALS AND METHODS**

**Source of Data Collection:** Study was conducted in a tertiary care hospital on patients diagnosed to have primary ocular tuberculosis attending the outpatient and inpatient department of ophthalmology

**Method of Data Collection**

**Sample Size:** The number of cases which will meet the inclusion criteria during study period.
Study Type: Prospective.

Study Period: 2012-2015

Inclusion Criteria
All Patients With Primary Ocular Tuberculosis.

Exclusion Criteria
All Patients With Pulmonary and Extrapulmonary Tuberculosis Other Than Ocular Tuberculosis.

Method of Study
Assessment Of Clinical Presentation Of All Patients With Diagnosed Ocular Tuberculosis By Clinical And Histopathological Study Without Any Pulmonary/Extrapulmonary Other Than Ocular Tuberculosis all patients With Confirmed Ocular Tuberculosis Received Standard Antitubercular Treatment Along With Routine Ocular Treatment.

Statistical Methods
The Study Was Analysed By Descriptive Statistics And Independent T Tests.

RESULTS
In our study we reported 7 cases of primary ocular tuberculosis. Tuberculosis of eyelid (1 case), Tuberculosis of conjunctiva (2 cases), Tuberculosis of lacrimal sac (2 cases), Tuberculosis of uvea presenting as acute non granulomatous anterior uveitis with iris granuloma (1 case) and infectious tubercular scleromalacia perforans (1 case).

Figure 1 shows tuberculosis of uvea presenting as acute non granulomatous anterior uveitis with iris granuloma.

In this case a 26 year old patients presented with pain and redness in right eye since 15 days. On ocular examination acute non granulomatous anterior uveitis with vacularized iris granuloma was present in the temporal part of Iris. Biopsy was taken from the iris granulomatous lesion and sent for histopathological examination.

Figure 2 shows histopathological picture of iris granuloma showing features of tuberculosis.

HPE report showed sections of Iris tissue containing loose connective tissue with underlying loose fibrous tissue, lymphocytes, multinucleated giant cells, histiocytes and epitheloid cells forming granuloma. Special stains for Acid fast bacilli was positive. Features were consistent with tubercular granuloma. The patient was advised antitubercular treatment for 9 months with topical steroid eye drops.
Figure 3 shows tuberculosis of conjunctiva who has developed symblepharon with recurrent dacryocystitis with osteomyelitis of lacrimal bone. The patient underwent dacryocystectomy with antitubercular treatment for 9 months.

Figure 4 shows tuberculosis of the lacrimal sac with fistula formation (post Incision and curettage).

In this case 18 year old female patient presented with chief complaints of swelling and pain in the right lacrimal sac region since two months. History of watering in right eye since 1 year. She was posted for incision and drainage. On opening abscess there was no evidence of pus but granulation tissue found which was curated and sent for HPE, which revealed tuberculosis of the lacrimal sac. Patient was stared on ATT. In this reported case there is no infection of the neighbouring tissue or could tuberculous lesion be uncovered elsewhere in the body after thorough diagnostic investigation.

Figure 5 Shows HPE report lacrimal sac curette sample showing features of tuberculosis.

Figure 6 Shows Infectious Tubercular scleromalacia perforans.

In this case 77 years old female patient presented with forward protrusion, bluish discolouration and loss of vision in the left eye since 2 years.

- Ocular examination (LE) showed:
  - Eccentric proptosis.
  - Diffuse extensive scleral thinning more marked nasally than temporally with exposure of the underlying uvea with vascular engorgement over the thinned out scleral surface.
  - Cornea was hazy with necrotic scleral plaques near the limbus without vascular congestion, anterior chamber was flat and other details were not made out.
  - Restriction of extraocular movements was present.
  - Vision: No perception of light
  - The patient underwentenucleation followed by artificial eye implantation after 3 months for cosmetic purpose. Enucleated eye ball was sent for Histopathological examination.

Figure 7 shows HPE report suggesting features of scleral tuberculosis.

HPE report showed sections of episclera and sclera containing loose connective tissue with underlying loose fibrous tissue, lymphocytes, multinucleated giant cells, histiocytes and epitheloid cells forming granuloma. Special stains for Acid fast bacilli is positive. Features consisent with scleral tuberculosis.
DISCUSSION

Tuberculosis is a ubiquitous disease and a major public health problem in developing countries like India. The frequencies of ocular TB in patients with uveitis and systemic TB are respectively 0-0.16% and 0.27-1.4%. The incidence of ophthalmic manifestations in patients known to have systemic tuberculosis is only 1-2%. Tuberculosis remains the world’s leading infectious cause of death and can also cause a variety of diseases throughout the body and the eye. Worldwide there are approximately 8 million new cases and 3 million deaths from tuberculosis each year. Approximately one third of the world’s population has been infected. The demographics of infection vary widely, with developing countries bearing the heaviest burden of disease.

In the United States in 1953, the annual risk of being infected with tuberculosis was 53 per 100,000 members of the population. This decreased to 9.4 per 100,000 by 1984, and the World Health Organization set a goal of eliminating tuberculosis worldwide. There was a resurgence in the United States to a peak of 10.5 per 100,000 by 1992; the reported incidence then declined to 5.1 per 100,000 in 2003. Ocular tuberculosis has always been considered rare, yet its incidence has varied widely across time, patient populations, and geography. In 1967, Donahue reported an incidence of ocular tuberculosis of 1.46% in 10,524 patients from a tuberculosis sanitarium.

A prospective study from Spain, reported in 1997, examined 100 randomly chosen patients with proven systemic tuberculosis and found ocular involvement in 18 patients (18%). In Malawi, Africa, a 2.8% incidence of choroidal granuloma in 109 patients with fever and tuberculosis was reported in a prospective study in 2002. In India, in a study conducted from January 1992 to December 1994, 0.6% of uveitis cases were believed to be caused by tuberculosis.

In Japan, a prospective case series from April 1998 to August 2000 reported that 20.6% of 126 patients with uveitis had a positive purified protein derivative (PPD) skin test result, and 7.9% were thought to have intraocular tuberculosis. In Saudi Arabia, during the period from 1995 to 2000, tuberculosis was the cause in 10.5% of uveitis cases seen in a referral center. In Boston, 0.6% of patients with uveitis from 1982 to 1992 were believed to have tuberculosis as an underlying cause.

Human immunodeficiency virus (HIV) has contributed to the increase in the incidence of tuberculosis worldwide; HIV increases the risk of development of active tuberculosis in patients infected with Mycobacterium tuberculosis. However, rates of ocular tuberculosis in patients with tuberculosis with or without HIV are variable. In a study reported in 1993 of autopsy eyes from...
235 patients with AIDS, intraocular tuberculosis was found in only 2 eyes. The effect of HIV on the immune system can influence both the diagnosis, by reducing the response to PPD testing, and the success of treatment.

EE Egbaegbe AE, AE Omoti (2008) reported tuberculosis is a cause of ocular morbidity, visual impairment and blindness. Prevention, early diagnosis and early treatment of TB may prevent avoidable visual loss.\(^\text{11}\)

Aliyu Hamsa Balarabe and Jotirmay Biswas (2015) reported the importance of a detailed ocular, systemic and laboratory evaluation to exclude TB in patients presenting with serpigenous choroiditis particularly if there is delay in clinical response despite appropriate treatment.\(^\text{12}\)

P Lalitha, SR Rathinam, M Srinivasan (2004) reported that early clinical recognition and prompt laboratory diagnosis together with aggressive topical antibiotic therapy may shorten morbidity and improve the clinical outcome of non tuberculous mycobacterial ocular infection.\(^\text{13}\)

**CONCLUSION**

Ocular tuberculosis may occur in the absence of any systemic disease and the patients may present with a wide variety of clinical signs. Also, the disease can mimic several clinical entities. Tuberculosis may affect all ocular tissues; choroiditis being the most common ocular manifestation. The retinal involvement occurs secondary to the underlying choroidal infection. The extraocular manifestations of the lid and adnexa has been rarely described in the recent review of literature. Treatment for ocular tuberculosis is the same as that for pulmonary tuberculosis. Due to the emergence of drug resistance, multidrug therapy is advocated. In the present time of the HIV pandemic, there has been a resurgence of tuberculosis and it is the most common opportunistic infection in HIV positive patients. HIV related TB shows a higher prevalence of extrapulmonary and disseminated TB. In our cases no HIV positive cases has been reported. Since the disease is treatable and eyes can be saved using anti-tuberculous treatment if detected early, considerable stress should be laid on its early diagnosis and prompt treatment so as to prevent ocular morbidity and blindness.

**REFERENCES**


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**Comparision between Sutureless and Gluefree Vs. Sutured Conjunctival Autograft for Pterygium Surgery**

**Dr. Usha Bhanu Kommineni, Dr. Rajesh Nayak, Dr. (Mrs) Sumana J Kamath, Dr. Manjunath Kamath M, Dr. Susan Dsouza**

Pterygium is a degenerative condition of the sub conjunctival tissue which proliferates as vascularized granulation tissue to invade the cornea, destroying the Bowman’s membrane and superficial layers of the stroma, the whole being covered by conjunctival epithelium. Inter palpebral fissure is the most common site of pterygium, usually on the nasal side.

Pterygium is a common ocular disease in many parts of the world seen mostly in tropical and subtropical areas. Environmental factors such as increased light exposure (UV rays), dust, dryness, heat and high wind influences growth of pterygium.1,2
Simple excision (bare sclera technique) is the commonly done method of treatment but is associated with high recurrence rates ranging from 24-89%.\textsuperscript{1,3}

According to recent studies, the use of sutureless glue free technique of conjunctival autograft following pterygium excision is found to improve comfort, decrease surgical time, reduce surgical complications as well as recurrence rates.\textsuperscript{1,4,5}

However, there is no single surgical technique that promises no recurrence and minimal complications.

**MATERIALS AND METHODS**

This prospective observational study was done in 24 eyes of 24 patients with pterygium from August 2014 to May 2015 at Kasturba Medical College Hospital, Attavar and Government Wenlock Hospital, Mangalore.

The patients complained of foreign body sensation, conjunctival injection, rapid growth with encroachment of the pupillary area, blurred vision from induced astigmatism, and in a few cases, cosmetic concerns.

The exclusion criteria for the study were those with atrophic pterygium, pseudo pterygium, ocular surface pathology, infection, dry eye, previous ocular surgery except pterygium surgery and those who cannot complete the follow up period.

All the patients recruited for the study were thoroughly evaluated with detailed history taking, visual acuity, refraction, complete ophthalmic examination with slit lamp, extraocular movements, keratometry and fundoscopy.

Using slit lamp examination, pterygium grading was done as follows-T1 (atrophic: episcleral vessels under the body of the pterygium-not obscured and clearly distinguished), T3 (fleshy: episcleral vessels totally obscured) and T2 (intermediate: all other pterygia not falling into these 2 grades). Based on width the of the pterygia at the limbus, they were divided into two groups: wide base (=5 mm) and narrow base (<5 mm).\textsuperscript{2,6} Also for the purpose of this prospective study, true recurrence was defined as any new fibrovascular regrowth across the limbus that was not present on the first postoperative day, whereas conjunctival recurrence was defined as any “gathering” of conjunctival tissue that did not cross the limbus.\textsuperscript{7}

An informed consent was taken from all the patients and they were considered into 2 groups: Group–A: Sutureless, glue free conjunctival autograft surgery performed in Government Wenlock Hospital. Group–B: Conjunctival autograft surgery with sutures operated in KMC Attavar.
**Surgical Technique**

The procedure was carried out under aseptic precautions in the OT under peribulbar anaesthesia. Eyelid speculum was inserted. The pterygium was excised with initial detachment of the its head from the cornea using a Tooke’s corneal knife. The body of the pterygium was separated from the limbus and from the overlying conjunctiva in a smooth clear plane using blunt and sharp dissection with Westcott’s scissors. Subsequently, the sub conjunctival pterygium tissue along with the thickened segment of conjunctiva and adjacent Tenon’s capsule were excised leaving bare sclera. Then the size of bare sclera was measured with calipers.

For the conjunctival autograft, either superior or superotemporal quadrant of bulbar conjunctiva was chosen. The donor site was injected with local anesthesia (Xylocaine 2%) to facilitate separation of the conjunctiva from Tenon’s capsule. Then the conjunctival limbal graft 2 mm larger in width and length than the recipient bed was marked using calipers.

A small opening was created and with careful blunt dissection using Westcott’s scissors, the entire graft was harvested reaching the limbus so as to include limbal stem cells. These limbal stem cells, act as a barrier to the conjunctival cells migrating onto the corneal surface, hence prevent recurrence. Forceps was used to gently slide the graft to the recipient bed with the epithelial side up and keeping the limbal edge towards the limbus.

**In group A:** Hemostasis was allowed to occur spontaneously, so as to provide autologous fibrin which glues the conjunctival autograft naturally in position. The scleral bed was viewed through the transparent conjunctiva to ensure that residual bleeding did not lift the graft.

The graft was held in position for 10 min by application of gentle pressure over the graft with fine non-toothed forceps. The eye was bandaged for 24 h.

**In group B:** The graft was sutured in position with 8/0 Ethilon or 7/0 Vicryl. First, the two limbal corners were sutured into the episclera and then into the conjunctiva keeping the limbal edge of the graft on gentle stretch. Then, the posterior corners of the graft were sutured to the bulbar conjunctiva. Additional sutures were placed to close the wound edges.

Post operatively, antibiotics, steroids (tapering done) and lubricating drops were prescribed for 6 weeks. All patients were assessed on the first postoperative day, at 2nd week, 6th week and finally at 6 months. They were examined for congestion, subconjunctival haemorrhage, graft edema, early graft retraction, graft necrosis, graft dehiscence, recurrence, granuloma and any other complications under slit lamp at each follow up visits. Also visual acuity and keratometry were done on day 1 post op.
Statistical analysis

For quantitative data, the difference was found using students paired t test and unpaired t test. Qualitative data analysis was performed by using proportion test or chi square test. SPSS for windows, version 17.0 was used to do analysis. P values smaller than 0.05 were considered significant.

RESULTS

A total number of 24 pterygia were operated, among which sutureless gluefree technique was used to fix conjunctival autograft in 12 cases of group A, while conjunctival autograft was sutured in the other 12 cases of group B.

Age distribution ranged from 21-70 years with maximum number of cases noted in 31-40 age group (33.33%) in both group A and B.

Total number of males who underwent surgery were 14 (58.3%) and females were 10 (41.7%). In group A, there were 8 (66.7%) males and 4 (33.3%) females while in group B, there were 6 (50%) males and 6 (50%) females.

Among the cases operated, 14 (58.3%) had pterygium in both eye while the remaining 10 had pterygium in one eye at the time of presentation, of which 5 (20.8%) had in the RE and the other 5 (20.8%) in the LE. Equal number of cases were operated for RE (50%) as well as LE (50%) in both groups.

All patients in both groups complained of a fleshy growth in their eyes. In group A, 8(66.7%) patients and in group B, 6(50%) patients came with the complaint of diminution of vision which was second common, and foreign body sensation in 3(25%) patients of group A and 2(16.7%) patients of group B.

9 patients (37.5%) with grade 2 narrow base pterygium were the major proportion of cases which got operated, followed by 7 patients (29.2%) of grade 2 broad base pterygium.

Statistically significant difference was noted between pre op K1 and post op K1 in both groups. In group A p=0.004 while in group B p=0.009 as shown in table 1.

Change in average K postoperatively was highly significant in group A with p=0.004 and difference of K1 and K2 pre and postoperatively was also significant with p = 0.013.

In group B, significant change in average K was noted with p=0.015 and highly statistically significant difference of K1 and K2 pre and postoperative was noted with p=0.007.

But when compared between the two groups, the change in average K and difference of K1 and K2 pre and postoperatively was not statistically significant.
Grade 3 broad base pterygium showed a mean of 3 +/- 0.35 D difference of K1 K2 preoperatively, followed by grade 2 broad base 1.39 +/- 0.59 D as shown in table 2.

As shown in the above table 3, statistically significant correction of astigmatism was noted in Grade 2 broad base with p=0.022 followed by grade 2 narrow base with p=0.033.
Post op graft edema was seen in 6 (25%) patients of which 3 (25%) belonged to group A and the other 3 (25%) belonged to group B. Early graft retraction was noted in 2 (16.7%) cases in group A and 2 (16.7%) cases in group B. Graft dehiscence was seen in 1 (8.3%) patient in group A. No case of graft necrosis or recurrence was noted.

DISCUSSION

Pterygium is a conjunctival degenerative disease for which the treatment of choice being surgical excision which is associated with a high recurrence rate. Hence several adjunctive measures have been proposed to decrease the recurrence.

Post op therapy with mitomycin C and beta irradiation may cause aseptic necrosis of the sclera and the cornea, cataract, persistent epithelial defects and visual loss.

Amniotic membrane graft or conjunctival autograft when fixed with sutures can cause post op discomfort, infection, chronic inflammation, suture abscesses, granuloma formation, buttonholes.

Fixing the conjunctival graft with fibrin glue is not only expensive, but can cause anaphylaxis and transmit prion diseases in susceptible individuals. Sutureless and gluefree method where autologous fibrin is allowed to glue the autograft, is easy, safe and economical to perform.

Previous studies have shown that sutureless and gluefree conjunctival autograft technique is more acceptable and comfortable when compared to conventional sutured conjunctival autograft for pterygium surgery, as the recurrence rate is comparable.

In this study, along with the safety and efficacy, astigmatic profile was also compared between the two groups.
In this study, most of the cases operated in group A had a mean age of 41.08 +/- 11.579 years. In group B, mean age was 45.92 +/-12.810 years. The number of males undergoing surgery was higher in both groups. Majority of the patients presented with bilateral pterygium. All patients noticed a fleshy growth in their eye, with diminution of vision being the second most common complaint followed by foreign body sensation. The majority who got operated were grade 2 narrow base pterygium.

Pterygium induced astigmatism can be explained by the fact that pterygium exerts mechanical traction on the cornea and causes pooling of the tear film at the leading edge of the pterygium.

According to a study by Sejal Maheshwari, the astigmatism decreased significantly following pterygium excision. Similar results were noted in this study where the mean value of astigmatism in group A was 1.375 +/-0.86 D which decreased by 0.625 +/- 0.726 D following surgery and was statistically significant. In group B, the mean value of astigmatism was 1.375 +/- 0.869 D which decreased by 0.729 +/- 0.757 D following surgery and was highly significant. Also significant correction of astigmatism was noted in grade 2 broad base and narrow base pterygium.

However, there was no statistically significant difference in the decrease of astigmatic error between the two groups in this study. This is in accordance with the study conducted by Rana Altan-Yaycioglu et. al., which showed no difference in the postoperative astigmatic changes between different surgical techniques of pterygium excision.

In this study, conjunctival edema occurred in 6 eyes (25%) which resolved by 2nd postoperative week. Early graft retraction with exposure of scleral bed occurred in 4 eyes, 2 in group A and 2 in group B and was associated with conjunctival edema. All cases resolved as the edema subsided.

Graft dehiscence is a recognized complication of techniques using glue. Froutan et. al. reported 13.33% rate of graft dehiscence using autologous fibrin and attributed this to a low concentration of thrombin and fibrinogen in autologous glue compared to a commercial preparation. According to a study by Shaaban A.M. Elwan, MD, graft dehiscence was due to either eye trauma, or a patient rubbing his eye vigorously and inclusion of Tenon’s capsule within the graft. In this study 1 case of graft dehiscence was seen in group A.

Small sample size is the main limitation of this study.

**CONCLUSION**

Sutureless and gluefree conjunctival autograft technique is equally easy, safe, effective method with better acceptance as patient comfort is more...
and cost of surgery is low compared to sutured autograft surgery. Also there is no significant difference in correcting astigmatism between the two groups, hence preferred.

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Benign Eyelid Lesions: 20 Years Experience at A Tertiary Eye Care Centre

**Dr. Kirthi Koka**, Dr. M Shahid Alam, Dr. Bipasha Mukherjee, Dr. Jyotirmay Biswas

Eyelid lesions are a frequently encountered entity in ophthalmic practice. The complex anatomy of the eyelid which is derived from various embryological layers gives rise to an array of eyelid lesions both benign
and malignant, the majority being benign in any centre. Clinical diagnosis of benign lesions is usually accurate however malignant lesions can seldom masquerade as benign lesions. Thus an accurate diagnosis based on clinical examination is difficult and histopathological examination helps identify those misdiagnosed cases which if not interpreted on time could have untoward implications. The incidence of benign eyelid lesions varies based on the geographic location with various factors such as genetics, skin type and amount of sun exposure etc. playing vital roles.

A knowledge of the incidence rates helps improve the accuracy of clinical diagnosis based on the presenting features. A number of studies report the incidence of benign and malignant eyelid lesions with greater importance given to malignant lesions. Only few studies compare the clinicopathological co-relation which determines the accuracy of clinical diagnosis. Our aim was to study epidemiological pattern of all histopathologically proven benign eyelid lesions and determine the accuracy of clinical diagnosis. To the best of our knowledge this is the first study in India to analyse only benign eyelid lesions.

MATERIALS AND METHODS

A retrospective analysis of all histopathologically proven benign eyelid lesions over the past 20 years was conducted. Patient files were retrieved and information regarding the demographics, laterality and topography of the lesion was collected. The benign lesions were classified as non-neoplastic and neoplastic. The non-neoplastic were further sub classified as infective and non-infective, while neoplastic lesions were sub classified as epidermal, adnexal and stromal lesions. The percentage of each lesion in the various sub categories was then determined. For each lesion the clinical diagnosis made was determined and this was compared with the final histopathological diagnosis obtained, from which the percentage accuracy of clinical diagnosis was determined. For the clinically misdiagnosed lesions, the most common misdiagnosis was determined and their relative frequency.

RESULTS

A total of 781 patients were analysed of which 438 (56%) were male and 343 (44%) were female (Figure 1). The mean age of the study group was 39.65 ± 19.63 years (Range 1-86 years). Benign lesions were more common in the adult age group (19–59 years) with 525 (67%) of the total patients occurring in this age group. Right (324) and left (356) eye were equally involved with upper eyelid (382; 49%) being more involved than the lower eyelid (284; 36%). The most common benign eyelid lesion was chalazion (481; 61.58%) followed
by nevus (94; 12.03%), papilloma (85; 10.88%), sebaceous cyst (26; 3.32%), molluscum contagiosum (25; 3.20%) and neurofibromatosis (24; 3.07%) in decreasing order of frequency (Figure 2). Chalazion was the most common eyelid lesion in all age groups. The second most common lesion was molluscum in pediatric age group and nevus in the adult age group (Table 1).

Within each sub category, molluscum was the most frequently encountered infective eyelid lesion (75.75%) and chalazion (98.16%) the most commonly occurring non infective eyelid lesion (Figure 3 and 4).

Among the neoplastic lesions, within the epidermal tumours we found the commonest non melanocytic tumour to be papilloma (32.94%) and melanocytic eyelid tumour was nevus (36.43%) (Figure 5). Sebaceous cyst (10%) was the commonest adnexal tumour and neurofibromatosis (9.3%) the commonly noticed stromal tumour (Figure 6 and 7).

We compared the final histopathological diagnosis with the initial clinical diagnosis and found that in 679 (86.93%) patients the clinical diagnosis correlated with the histological diagnosis. Clinicopathological correlation was highest in chalazion followed by nevus and papilloma. Incorrect clinical diagnosis was obtained in 102 (13.06%) patients (Table 2).

Papilloma was the most commonly misdiagnosed lesion and was thought to be a wart or a seborrhoic horn. Nevus was confused for a papilloma whereas molluscum lesions were thought to be a pyogenic granuloma or a sebaceous cyst.

| Table 1 |
|-----------------------|-----------------|-----------------|-----------------|
| Chalazion             | 1-18            | 19-59           | 60-90           |
| Benign adnexal tumour | 56              | 349             | 76              |
| Cap angioloma         | 0               | 0               | 0               |
| Cap hemangiomma       | 2               | 1               | 0               |
| Cav hemangiomma       | 0               | 0               | 0               |
| Kertocanthoma         | 0               | 0               | 0               |
| Molluscum             | 20              | 5               | 0               |
| Lymphangioma          | 1               | 2               | 0               |
| Amyloidosis           | 0               | 0               | 0               |
| Dermoid               | 0               | 0               | 0               |
| Pyogenic granuloma    | 1               | 0               | 0               |
| Inclusion cyst        | 0               | 0               | 0               |
| Cutaneous horn        | 0               | 1               | 0               |
| NF                    | 9               | 15              | 0               |
| Nevis                 | 9               | 61              | 24              |
| Pilomatrixoma         | 0               | 2               | 0               |
| Rhinosporidosis       | 0               | 3               | 0               |
| Sebaceous cyst        | 0               | 11              | 15              |
| TB                    | 1               | 0               | 0               |
| Wart                  | 0               | 3               | 0               |
| Xanthogranuloma       | 2               | 7               | 1               |
| Xanthelasma           | 0               | 6               | 0               |
| Papilloma             | 5               | 49              | 31              |
DISCUSSION

Eyelid lesions contribute to a large volume of specimens sent for histopathological examination. In our study we reviewed the results of 966 slides of eyelid lesions examined at our institute from 1995 to 2015 and found majority of them to be benign (781; 81%). The mean age of presentation for benign lesions in our study was 39.65 ± 19.63 years. This was lesser than the mean age reported by Toshida\textsuperscript{2} et. al. and Asproudis\textsuperscript{3} et. al. whose studies showed mean age to be 47.8 ±23.2 years and 49 ± 1.45 years respectively.

In the present study, chalazion to be the most common eyelid lesion followed by nevus and papilloma. Tesluk\textsuperscript{4} et. al. in their study also found chalazion (13.4%) to be the most prevalent benign lid lesion followed by seborrheic keratosi. Ramya\textsuperscript{5} et. al. however found capillary hemangioma (31.1%) followed by nevus (20%) to be the most common benign lid lesions. The incidence of various benign lesions varies with different studies. Similar results were reported in 4 different studies conducted in Japan\textsuperscript{2}, Thailand\textsuperscript{6}, Hongkong\textsuperscript{7} and Tehran\textsuperscript{8} which found nevus followed by squamous

![Table 1](image)
papilloma to be the most common benign eyelid lesions. An analysis by Al Faky however found sweat gland hidrocytoma (29.3%) to be the most common.\textsuperscript{1} Deokule \textit{et. al.} had slightly different results with papilloma (24.5%), sebaceous cyst (16%) and chalazion (7%) being most common in decreasing order of frequency.\textsuperscript{9} The difference in incidence rates are influenced by multitude of factors which include geographic and climatic conditions, skin type, genetics and amount of sun exposure. The increased incidence of
sweat gland hidrocytoma in Saudi Arabia is presumed to be due to the warm climatic conditions and increased activity of sudoriferous glands in people of this region. The accuracy of clinical diagnosis made by the ophthalmologist in comparison to the final histopathological diagnosis in our study was 86.93% (679/781). There were very few studies which studied the clinical accuracy of diagnosis of benign eyelid lesions and we found two studies by Deokule and Af Faky who reported similar accuracy rates of 96% and 95.9% respectively. This was higher than the accuracy rates found in our study probably due to the smaller sample size in their study.

CONCLUSION
Our study is the first and largest in India to study the epidemiological pattern of benign eyelid lesions and determine the clinical accuracy of diagnosis. Epidemiological studies are helpful to practicing ophthalmologists and residents as knowledge of the incidence rates of various eyelid lesions helps improve the accuracy of diagnosis. These studies also prove the importance of histopathological examination in diagnosing atypical lesions as 100% accuracy cannot be achieved by simple clinical examination. Thus all eyelid lesions excised should be subjected to histopathological confirmation.

REFERENCES
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Comparison Fluorometholone and Ketorolac When Used with Olopatadine in Seasonal Allergic Conjunctivitis

**Dr. Neha Chauhan, Dr. Krishna Kuldeep, Dr. Tirupati Nath**

Ocular allergy is a general term to describe different phenotypes, of which seasonal and perennial allergic conjunctivitis represent the majority of diagnoses.¹ Allergic conjunctivitis is a complex disorder that significantly contributes to the burden of misery and economic impact resulting from environmental allergies, especially in those patients who are either untreated or ineffectively treated.² Seasonal and perennial allergic rhinitis and conjunctivitis cause disruption in daily activities, which is reflected by diminished quality of life measures.²,⁷ Managing allergy effectively requires adequate relief of symptoms and prevention of future symptoms. With this approach, patients have reported enhanced quality of life.²,⁸

Allergic conjunctivitis is typically a type 1 IgE-mediated hypersensitivity reaction. The ocular allergic response is a cascade of events that are coordinated by mast cells.³ The presence of an allergen makes the body to mount an antigen specific response, releasing cytokines and also producing antigen-specific immunoglobulin E (IgE). IgE then binds to mast cells with release of histamine and further release of cytokines, prostaglandins and platelet-activating factor with other intermediaries. These intermediaries cause an allergic inflammation and symptoms through the activation of inflammatory cells.⁴ This process could then progress to chronic allergic inflammation where there is proliferation of fibroblast in the conjunctiva with resultant development of papillae in some patients.⁵,⁶
The comparatively large surface area of the conjunctiva, a robust vascular supply, and a dense concentration of mast cells make allergic conjunctivitis a particularly vexing form of allergy for affected patients. As such, appropriate diagnosis and effective treatment can have a positive impact on patient’s quality of life and disease management. In addition, meeting a patient’s perceived needs is paramount for effective allergy management, particularly with ocular allergy, due to the eyes’ habitual but necessary exposure to the environment.

Topically applied ophthalmic agents are the principal treatment method for SAC. Olopatadine, has been shown to have a dual action, in terms of both mast cell degranulation inhibition and histamine H1 receptor blockage. This agent has a rapid onset due to antihistamine activity and prolonged duration of action due to mast cell stabilization, which allows for a twice daily dosage. Ketorolac is an NSAID approved in the USA for the relief of ocular itching associated with SAC which works by inhibiting the prostaglandins’ pruritogenic effects on the conjunctiva. Corticosteroids such as fluorometholone acetate 0.1% are potent anti-inflammatory agents. In an allergic reaction, corticosteroids suppress production of pro-inflammatory mediators such as cytokines and prostaglandins, thus inhibiting the recruitment of eosinophils and other leukocytes into the tissue during the late phase of the allergic reaction.

The drugs used in this study are effective in alleviating the symptoms of SAC as shown in previous studies and being used routinely for treating SAC. This study compares the efficacy of ketorolac and fluorometholone eye drops used in conjunction with olopatadine in inhibiting the signs and symptoms of SAC.

**MATERIALS AND METHODS**

In this randomized, placebo controlled study 128 patients with the clinical diagnosis of SAC were assigned into two groups. First group received olopatadine and fluorometholone in one eye and placebo in the contralateral eye whereas second group received olopatadine and ketorolac in one eye and placebo in the contralateral. Olopatadine hydrochloride 0.1%, fluorometholone acetate 0.1% and ketorolac tromethamine 0.4% ophthalmic solutions were used in twice daily dosing. Preservative free artificial tear drops were used as placebo.

Subjects with severe allergic conjunctivitis with involvement of cornea or requiring systemic therapy for same, prior history of ocular herpes infection, retinal detachment or diabetic retinopathy, dry eye, prior or current use of systemic or topical steroids, NSAIDs, anticholinergics, immunosuppressants or antihistamines and ocular surgery within 8 weeks were excluded from the study.
Eligible patients underwent full ophthalmological examination and were randomly allocated to the two groups. Objective signs and subjective symptoms were observed at baseline (before treatment) and on 3rd, 7th and 15th day after treatment initiation. The clinical signs (chemosis, hyperemia, mucus secretion, eyelid edema, papillary hyperplasia) and symptoms (itching and tearing) were evaluated summing up the score using a 3-point scale.

Results were analyzed by Mann-Whitney U test, p values less than 0.05 were defined as significant.

**RESULTS**

There were no significant differences among the groups regarding baseline scores. At all follow up visits, in both groups, scores for ocular itching, conjunctival redness, tearing, chemosis, mucus secretion, eyelid swelling and papillary hyperplasia were significantly improved in drug-treated eyes compared with placebo-treated eyes (p<0.03 for olopatadine-ketorolac group and p < 0.01 for olopatadine-fluorometholone group).

All parameters improved less on 3rd day of the treatment in both groups, however, significant reduction in clinical signs and symptoms were seen on 7th and 15th day compared with those receiving placebo. Fluorometholone was found superior to ketorolac in reducing itching (p=0.021), hyperemia (p=0.016), mucus secretion (p=0.034), chemosis (p=0.031), eyelid edema (p=0.013) and papillary hyperplasia (p=0.031) and both drugs were similar in alleviating tearing (p =0.103).

**DISCUSSION**

Allergy is a well-recognized and very common life disruptor. Ocular allergy is often overlooked but represents a significant component of the burden of allergic disease for many patients. The eye is an organ critical for survival yet is directly exposed to the environment and offending allergens. As such, managing ocular allergy can pose a significant therapeutic challenge. Previous studies have shown superior targeting and greater effectiveness of topical treatment compared with systemic therapies in managing ocular allergies.

The efficacy and tolerability of olopatadine ophthalmic solutions administered b.i.d. have been demonstrated in comparative studies in patients with allergic conjunctivitis. It provides superior efficacy and a more rapid resolution of the signs and symptoms of SAC compared to other drugs of same group. In a previous placebo-controlled study it was reported that, compared with an artificial tear substitute, olopatadine was more efficacious and better tolerated in patients with SAC.
This analysis compares 2 currently available topical ocular anti-allergy agents (fluorometholone and ketorolac) which act by a mechanism different to olopatadine in an attempt to better understand what constitutes therapeutic success from the patient’s perspective.

Ketorolac is an NSAID; it works through the inhibition of cyclooxygenase, which produces prostaglandins. Prostaglandin D2 is among the newly
synthesized mediators released by mast cells following antigen stimulation, and inhibition of the production of this mediator can decrease the signs and symptoms of SAC.\textsuperscript{14} Antipruritogenic and antihyperaemic actions of ketorolac in the treatment of SAC can be explained by inhibition of prostaglandin synthesis, particularly prostaglandins D2 and E2.\textsuperscript{14} According to Deschenes et. al.\textsuperscript{13} ketorolac did not significantly reduce itching and increased the hyperaemia compared to placebo. The authors explained ketorolac’s lack of effectiveness in the inhibition of allergic response in the human conjunctiva on the basis that either prostaglandin D2, which is important in guinea pig allergic conjunctivitis, might have a limited role to play in human allergic conjunctivitis, or that the dosing regimen employed (one application only, approximately 30 mins before allergen) was not enough for the drug to show its effect. The first explanation contradicts other studies which have clinically demonstrated the effectiveness of ketorolac in the treatment of SAC.\textsuperscript{22,23} In these studies, ketorolac was used four times daily for 1 week. In our study, few patients complained of stinging sensation and an increase in hyperemia in the eye on ketorolac instillation. The paradoxical increment in the hyperaemia was explained by ocular irritation upon ketorolac solution administration.\textsuperscript{13} The effectiveness of ketorolac was observed 7th day onward.

Several studies have demonstrated the efficacy and tolerability of topical corticosteroids in allergic conjunctivitis. Fluorometholone 0.1% has significant clinical therapeutic effect in treating external ocular inflammation (conjunctivitis, episcleritis, scleritis). Fluorometholone acetate 0.1% was also compared with prednisolone acetate 1.0%; no significant difference was found between these agents with respect to their ability to suppress external ocular inflammation.\textsuperscript{16} Similarly, the safety and efficacy of the two fluorometholone formulations were assessed in the CAC model and both were found to suppress the allergic response at 3 and 6 hours after dosing through equivalent and significant reductions in total allergy scores and individual ratings for injection, chemosis and itching.\textsuperscript{24} Although a better therapeutic effect can be achieved with higher potency steroids such as prednisolone acetate, less potent fluorometholone acetate was chosen.
because of its lower incidence of adverse effects. In the present study, fluorometholone acetate was more effective than placebo in reducing the signs and symptoms of SAC. The effectiveness of this drug was seen on 3rd follow up day itself but significant relief was reported from 7th day onwards.

There was a non-significant decrease in mean itching and tearing scores in the placebo group, most probably related to the washing out of the allergen and the lubricating effects of the placebo eye drops on the ocular surface.

**CONCLUSION**

Both fluorometholone and ketorolac ophthalmic solutions were found to be effective in alleviating the clinical signs and symptoms of SAC compared to placebo. However, fluorometholone was better than ketorolac in relieving redness, mucus secretion, chemosis, eyelid edema, papillary hyperplasia and itching when concomitantly used with olopatadine, but were found to be equally effective in relieving tearing.

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Cytopathologic Correlation of Diagnostic Vitrectomy: Study of 39 Cases in A Tertiary Care Institute

Dr. Jayesh B Patil, Dr. Biswas Jyotirmay, Dr. Pukhraj Rishi, Dr. S. Krishnakumar

To assess results of cytopathologic study of vitreous biopsy in suspected neoplastic conditions and recalcitrant inflammation or infection.

Purpose of this study is, we analyzed the contribution of vitreous cytology to the determination of a final clinical diagnosis by comparing suspected preoperative clinical diagnosis and cytopathologic diagnosis.

MATERIALS AND METHODS

We did diagnostic vitrectomy in 29 cases between 2013 and 2015. Data was collected retrospectively. Data was collected from electronic medical records and clinical notes in paper files from the patients presented to our hospital.

Indications for vitreous biopsy were (1) Strong suspicion of intraocular lymphoma; (2) Recalcitrant inflammation where response to treatment was not good, and malignancy needed to be ruled out; (3) when intraocular infection was considered the primary cause of the inflammation. Before vitreous sampling, the patients were evaluated for systemic disease and for other known entities in uveitis as appropriate. Patients with suspected primary intraocular lymphoma also underwent Neuro-imaging. Ocular B-scan ultrasonography was carried out when the retinal view was inadequate to rule out a retinal detachment or intraocular mass.

Vitreous biopsy was performed in the Operation theatre. In the laboratory undiluted vitreous samples were used to make 1 or 2 cytospins and were
stained with hematoxylin and eosin. One ophthalmic pathologist examined the majority of the cytologic preparations.

**RESULTS**

29 patients underwent vitreous biopsy, 15 (52%) patients were male and 14 (48%) patients were females. The average age was 49 years and the range was (1-74 years).

Out of 29 patients, 12 were suspected of having primary intraocular lymphoma. In these 12 samples, 6 samples were having malignant cells on cytopathologic examination suggestive of lymphoma.

**Selected case reports**

Out of 12, 1 patient had vision of perception of light in right eye following vitreoretinal surgery done elsewhere with MRI finding of elevated lesion in right eye. At presentation to our institute he had left eye vitritis. His vitreous biopsy specimen cytology suggested large cell lymphoma. He underwent both eyes External beam radiotherapy and followed up with preservation of normal vision in left eye.

2 patients were diagnosed case of CNS lymphoma. Out of these 1 patient had both eyes vitritis and sub retinal yellow precipitates. This patient's Cytology smear showed few scattered large lymphoid cells. Cells were having high nucleo-cytoplasmic ratio suggestive of intraocular lymphoma. Another patient had history of neurosurgery for excision of CNS lymphoma, she presented 1 year after neurosurgery with right eye posterior pole localized retinal detachment with macula off with sub macular mass. After vitrectomy cytopathologic examination of vitreous specimen showed large atypical lymphoid cells, cells were having high nucleo cytoplasmic ratio suggestive of lymphoma. Patient was systemically investigated and external beam radiotherapy was given for CNS recurrence. After External beam radiotherapy right eye lesions regressed.

Primary intraocular lymphoma. cytopathology shows large pleomorphic lymphoid cells with a high nuclear to cytoplasmic ratio, prominent nucleoli,

<table>
<thead>
<tr>
<th>Diagnosis</th>
<th>No. of Cases</th>
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<tbody>
<tr>
<td>Vitreoretinal lymphoma</td>
<td>9 (31%)</td>
</tr>
<tr>
<td>Chronic inflammation</td>
<td>9 (31%)</td>
</tr>
<tr>
<td>Amyloidosis</td>
<td>1 (3%)</td>
</tr>
<tr>
<td>Inconclusive diagnosis</td>
<td>8(27%)</td>
</tr>
<tr>
<td>Phacolytic response</td>
<td>1 (3%)</td>
</tr>
<tr>
<td>Chronic uveitis</td>
<td>1 (3%)</td>
</tr>
</tbody>
</table>
and scanty basophilic cytoplasm. Necrosis, which is frequently present, is admixed with the lymphoma cells (hematoxylin and eosin).

A 70-year old male presented with OU diminution of vision since 9 years. OS had undergone vitrectomy elsewhere; details of procedure and any cytopathological study of OS were not available with patient. OD vitrectomy was done. On cytopathology, vitreous sample showed eosinophillic acellular material, further on congo red staining amyloidosis was diagnosed.

**DISCUSSION**

Cytopathologic techniques have become important in establishing diagnoses and confirming clinical diagnoses in ophthalmology.

A brief review of cytopathologic study of ocular fluids was done by W. Richard Green in 1984.¹

Diagnostic vitreous biopsy is now easier as improved vitrectomy instruments and techniques are available.

A large proportion of patients with nonspecific vitritis do not have a history that is suggestive of a specific diagnosis; thus, diagnostic vitrectomy for undiagnosed vitritis is a valid option. Diagnostic PPV is not a substitute for more common laboratory and radiologic investigations, but it can be an important adjunct for diagnosis and directing treatment.

A number of publications have analyzed diagnostic vitrectomy for PIOL, endophthalmitis, nonspecific uveitis, or a combination of these conditions. A final diagnosis was obtained in 20% to 92% of diagnostic vitrectomies in these publications.²,³,⁴,⁵,⁶ The discrepancy between publications results from diverse definitions for a final diagnosis.

Because the diagnosis of PIOL is critical for treatment and management of patients presenting with vitritis, a few reports have specifically focused on this diagnosis.
Our series included samples from number of vitreoretinal surgeons, over period of 2 years. Each surgeon had own criteria for requesting cytopathologic examination.

In those patients for whom cytology did not result in a specific final diagnosis, or for whom it specifically ruled out PIOL, there was greater support for continued therapy for idiopathic uveitis.

There are many reasons for the delay of the proper diagnosis. Minor ocular symptoms do not urge the patient with PIOL to seek ophthalmologic examination; the biomicroscopical features of PIOL mimic many uveitis entities.

Optimal handling of the specimen and evaluation of the slides by an experienced cytopathologist are critical in the diagnostic workup of PIOL. The diagnosis of intraocular lymphoma from vitreous specimens depends on proper handling of the specimens, methods of aspiration, concentration, fixation and staining. To achieve the best possible result, direct communication between an ophthalmic surgeon and cytopathologist is essential. The patients should be observed oncologically with respect to a high risk of developing cerebral PNSL disease subsequently.

In conclusion, our study indicates that diagnosis of PIOL is difficult and that it can be improved. A high index of clinical suspicion is most important to diagnostic success.

In these challenging cases in which clinical examination and systemic laboratory workup failed to identify the cause of the intraocular inflammation, diagnostic pars plana vitrectomy with directed fluid analysis helped to establish a diagnosis in a large number of cases. By ruling out malignancy or infection with this technique, clinicians may proceed more confidently in treating the patient for a nonspecific inflammatory condition. Conversely, the identification of the specific etiology causing the inflammation will allow for more directed therapy both locally and systemically.

In conclusion, we have demonstrated that vitreous aspiration needle tap is a safe investigative procedure, able to provide an adequate sample to differentiate between infectious, malignant, and inflammatory causes of uveitis in most patients.

REFERENCES

Ocular Pathology Free Papers


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**Ocular Malignancies in North India: Clinico-Pathological Pattern and Treatment Outcome with Special Emphasis on Role of Neoad**

Dr. Maurya Rajendra P, Dr. Virendra Pratap Singh, Dr. Mahendra Kumar Singh, Dr. Ishan Yadav

Though ocular malignancy is a serious health care problem due to its potential threat to both sight and life but not much importance is paid to the ocular oncology particularly in developing countries. Often lethal ocular malignancies are diagnosed late or misdiagnosed resulting in decreased survival rate. Primary ocular malignant tumors can arise from eyelid and periorcular skin, orbit and intraocular structures. Commonest intraocular malignant tumors are Retinoblastoma (pediatric) and Uveal Melanoma (adult).\(^1,2\) Common extraocular malignant tumors are Lid Carcinomas like squamous cell carcinoma, basal cell carcinoma and sebaceous gland carcinoma and orbital malignancies like Rhabdomyosarcoma, Lacrimal gland Carcinoma and lymphoma. We assessed the clinico-pathological pattern, treatment outcomes and survival rate in various ocular malignant tumors.

**MATERIALS AND METHODS**

Prospective interventional study of 150 cases of primary ocular malignancy were carried out in Ocular oncology, Orbit and Oculoplasty unit of
Department of Ophthalmology, Institute of Medical Sciences, Banaras Hindu University over a period of four years. All patients were evaluated by history, detailed ocular and ENT examination, complete hematological, radiological and pathological investigations. Tumor location, size, pattern of lesion, metastasis and staging were determined. Histopathological differentiation and radio-imaging characteristics were noted in all the patients. Patients were treated Surgically or with systemic Chemotherapy. VEC (Vincristin, Etoposide and Carboplatin) regimen was used for Retinoblastoma, VAC (Vincristin, Adriamycin and Cyclophosphamide) regimen for Rhabdomyosarcoma and PMB (Cis-platinum, Methotrexate and Bleomycine) regimen was used for eyelid, periocular and orbital malignancies. Radiotherapy was used for non responders/recurrent cases. Response to treatment, complications and drug toxicity were evaluated after complete treatment. Response of chemotherapy were evaluated according to WHO criteria as - Complete response (CR): disappearance of all known disease, Partial response (PR): 50% or more decrease in tumor size, No response (NR): < 50% decrease or < 25% increase in tumor size, Progressive disease (PD): 25% or more increase in tumor size or appearance of new lesions.

RESULTS

Out of 150 cases, there were 106 (70.67%) males and 44 (29.33%) females, a ratio of, 2.41:1. The age ranged from 3-79 years, malignancy was predominantly seen in between 40-68 years, although 40.67% cases were children (<16 years). The age and sex distribution of the cases is shown in Table -1. The commonest sites of malignancy was intraocular malignancy (53, 35.33%), followed by Eyelid carcinoma (40, 26.67%), Orbital malignant tumors (34, 22.67%) including lacrimal gland carcinoma and rhabdomyosarcoma, Conjunctival malignancy (23, 15.33%). Retinoblastoma (41, 27.33%) and Rhabdomyosarcoma (20, 13.33%) was commonest childhood malignancy (Figure 1). 12 (8.0%) cases had bilateral retinoblastoma. Choroidal malignant melanoma (12, 8.0%) was the commonest adult intraocular malignancy. Squamous Cell Carcinoma (15, 10.0%) was the commonest eyelid tumor followed by Basal Cell Carcinoma (14, 9.33%) and sebaceous gland carcinoma (11, 7.33%) (Figure 2). Majority (46.67%) were in advanced stage malignancy.
Figure 2: A case of Sebaceous gland Carcinoma of upper eyelid was managed by full thickness excision and lid reconstruction with Cutler Beard technique.

Figure 3: A case of Basal cell Carcinoma of lower eyelid was managed by full thickness excision and lid reconstruction with Tanzel's rotational flap technique.

Histopathological examination showed poorly or undifferentiated tumor in 70 (46.67%) cases, well differentiated in 50 (33.33%) cases and rest were moderately differentiated. Out of total 40 (26.67%) cases of lid carcinoma, 23 (15.33%) were involving lower eyelid and rest affected upper eyelid and primary treatment modality was surgical excision with direct closure (10, 6.67%) and lid reconstruction by Tenzel's semicircular rotation technique.

Figure 4: Patient with Rhabdomyosarcoma showing Complete response after 10 cycle of Systemic Chemotherapy (VAC Regimen).

Figure 5: Complete response of Chemotherapy in a patient of Orbital Lymphoma
flap (18, 12.00%) and Cutler Beared technique (12, 8.00%) (Figure 2 and 3). Orbitotomy was performed in 14 (9.33%) cases of orbital malignancy. Enucleation and Exenteration were indicated in 19 (12.67%) cases. 66 (44.00%) cases were managed by neoadjuvant chemotherapy. Overall response (CR+PR) of chemotherapy was 72.73% (Figure 4 and 5) while in 27.27% cases there was no response. Maximum response of chemotherapy was observed with cis-platinum, bleomycine, methotrexate (PMB) regimen (Figure 6). Response to chemotherapy was better in poorly and undifferentiated carcinoma. None of the patients had serious or fatal side effects related to the chemotherapy. Out of 66 cases treated by chemotherapy, 42(63.64%) had mild to moderate gastrointestinal toxicity, 8 (12.12%) had myelosuppression, 22 (33.33%) alopecia and 5(7.58%) had renal toxicity. The mean follow up period was 10.26 months. Of all malignant cases 4 (2.67%) were lost in the follow up. At final follow up 112 patients were alive and well. However 13 (8.67%) cases had recurrence for which repeated surgery followed by radiotherapy were done.

**DISCUSSION**

This series provides an insight into the incidence, clinico-pathologic pattern and response of various treatment modalities for primary ocular malignancy. There have been a number of surveys on ocular malignancies reported in the literature, however there exists a variations in incidence, pattern and presentations on the basis of geographical locations. Our study revealed 70.67% male and 29.33% female contrary to study from Nepal (45.8% male and 54.2% female) and Singapore probably due to less health consciousness in female patients. Bimodal trend of age distribution was observed with first spike around 15 years and second around 55 years similar to other studies. In our series commonest histopathological type of malignancy were Squamous cell carcinoma and Retinoblastoma. Other researchers also reported Squamous cell carcinoma as commonest malignancy. In this study Squamous cell carcinoma was commonly affecting eyelid (10.0%) and conjunctiva and cornea (11.33%) which is comparable to other studies. Retinoblastoma and Rhabdomyosarcoma...
were commonest pediatric ocular malignancy associated with poor prognosis in advanced stage.

In this study all patients of eyelid and conjunctival carcinoma were managed by surgical excision with or without adjuvant chemotherapy. Recurrence is often common in advanced stage malignancies due to inadequate treatment. The combination of chemotherapy and or radiotherapy with surgical excision of ocular tumor minimizes the Recurrence rate. In our study 44.00% cases of malignant ocular tumors were treated by adjuvant chemotherapy with 72.73% overall response (CR+PR) rate. Response rate was higher in those patients who were treated by PMB regimen and response was better in poorly and undifferentiated carcinoma than well
differentiated ones. Luxenberg *et al.* and Morley *et al.* also reported high response rate of cis-Platinum based chemotherapy for basal cell carcinoma. Although Cis-platinum is nephrotoxic, ototoxic but we found only 7.58% renal toxicity.

**CONCLUSION**

Malignant tumors of the eye and adnexa are quite common in this part of country. Mostly patients are presented late due to ignorance and lack of awareness. As survival in ocular malignancy is inversely related to the stage of the tumor at presentation. Early diagnosis and appropriate treatment is necessary. Multimodal treatment have been advocated for ocular malignant tumors including surgery, chemotherapy, radiotherapy and cryo-therapy etc. Chemotherapy reduces the tumor bulk hence it is better adjuvant to surgery and radiotherapy in advanced stage ocular malignancies.

**REFERENCES**

Clinicopathological Study of OSSN in Non-HIV Patients and Effect of Topical Cyclosporine—Case Series

Dr. Sahana R Manipur, Dr. Dadapeer K, Dr. Lakshmi B. R., Dr. Kavitha C. V.

Ocular Surface Squamous Neoplasia is a spectrum of conjunctival and corneal epithelial neoplasia manifesting as dysplasia, carcinoma-in-situ and squamous cell carcinoma (SCC). It is the third most common ocular tumour and most common malignancy of conjunctiva.\(^1,2\) Risk factors associated are male sex, advanced age, ultraviolet-B exposure, HPV-\(^{16,18}\) or HIV infection, Xeroderma pigmentosum or any condition where limbal microenvironment is altered.\(^1\) It can present as leukoplakic, papillomatous, or gelatinous lesion. Diagnosis is made by clinical picture and histopathological examination of the tissue. Treatment modalities include surgical excision, cryotherapy, post-operative topical chemotherapy, topical/intralesional immunotherapy, contact radiation therapy depending on the size of the lesion, its location, invasion, recurrence, age and general condition of patient.\(^3\)

AIM: Studies have been done on patients with OSSN and effect of topical chemotherapy with Mitomycin-C or 5-FU. As few studies are there and clinically OSSN is difficult to diagnose, this study was aimed to know the clinicopathological manifestations of OSSN in non-HIV patients and efficacy of topical cyclosporine 0.05% on outcome in terms of recurrence and complications.

**MATERIALS AND METHODS**

Prospective consecutive case series of 4 patients presenting with conjunctival growth on medial side of eye suspected OSSN were studied over a period of 6 months at Sri Chamarajendra hospital, HIMS, Hassan.
After history taking, all cases were examined under slit lamp and site, size, laterality and extension of the lesion noted. After taking informed consent and necessary investigations all patients were posted for surgery that is wide excision of the lesion keeping a safe margin of 2 mm of normal appearing conjunctiva and tissue sent for histopathological investigation.

Histopathology report of first 3 cases confirmed it as OSSN. They were followed up post-operatively with antibiotic-steroid eye drops 6 times and tapered over a period of 4 weeks and topical 0.05% cyclosporine for 8 weeks and were examined at 1, 3 and 6 months after surgery and looked for recurrence and complications.

RESULTS

Out of 4 cases of suspected OSSN, diagnosis was confirmed in 3 cases. Mean age was 51 (30-65) years and 2 were women. All 3 lesions were located in nasal quadrant and corneal invasion was seen in 2 cases.

Case 1 was an elderly male patient with gelatinous mass of about 2x1 cms with leukoplakic plaque in right eye nasal quadrant extending 5 clock hours over cornea (Figure 1).

Case 2 was a young female patient with cystic lesion of conjunctiva of about 1x1 cm in left eye nasal quadrant and it was confined to conjunctiva (Figure 2).

Case 3 was an elderly female patient with papillomatous growth of about 2x2.5 cms in left eye nasal quadrant extending 6 clock hours covering pupillary area. Feeder vessels were present (Figure 3).

Case 4 was an elderly female patient with gelatinous mass of about 0.5x0.25 cms in left eye nasal quadrant extending 3 clock hours over cornea (Figure 4).
Tiong T et al. found that more women were enrolled in their study on cases with suspected OSSN and more males were associated with squamous cell carcinoma compared to female gender.

Chowdhury R K et al. found equal involvement of OSSN in males and females, unlike other studies where there was male preponderance.

In our study also female enrolment was more and Squamous cell carcinoma was seen in one male and one female patient.

In a study conducted by Kim BH et al., majority of SCC were located at nasal side of conjunctiva and cornea.

All 3 cases in our study showed OSSN in nasal quadrant of conjunctiva.

Tiong T et al. also found association between lesion size and squamous cell carcinoma that is; larger the tumour size more invasive is the lesion.

Case 3 in our study, with larger tumour size showed epithelial dysplasia without invasion.

Othman suggested use of reduced concentration of topical Mitomycin C (0.01%) when it is combined with cyclosporine 0.05% in invasive SCC and also mentioned side effects of topical Mitomycin like transient keratitis, redness and irritation.

Flynn T H et al. could not implicate topical cyclosporine as the causative agent for occurrence of OSSN in their case report, since no patient with topical cyclosporine use during 3 years period had developed OSSN.

Chowdhury R K et al. found recurrence of lesion following surgery is common in invasive squamous cell carcinoma and concluded that if at all recurrence occurs after wide excision, can be treated with re-surgery and topical Mytomycin C.

We have tried monotherapy with topical cyclosporine 0.05% in all 3 OSSN patients in our study, so that side effects of Mitomycin were eliminated.

### Table 1: Demographic and Clinico-Pathological Profile of Patients with OSSN

<table>
<thead>
<tr>
<th>Case</th>
<th>Age (Yrs)</th>
<th>Sex</th>
<th>Type</th>
<th>Laterality</th>
<th>Histology Diseases</th>
<th>Associated Diseases</th>
<th>Recurrence</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>65</td>
<td>Male</td>
<td>Gelatinous with leukoplakic plaque</td>
<td>Nasal</td>
<td>Squamous cell carcinoma with positive tumour margin</td>
<td>—</td>
<td>Yes</td>
</tr>
<tr>
<td>2</td>
<td>30</td>
<td>Female</td>
<td>Cystic</td>
<td>Nasal</td>
<td>Squamous cell carcinoma</td>
<td>—</td>
<td>No</td>
</tr>
<tr>
<td>3</td>
<td>58</td>
<td>Female</td>
<td>Papillomatous</td>
<td>Nasal</td>
<td>Epithelial dysplasia</td>
<td>—</td>
<td>No</td>
</tr>
</tbody>
</table>
Recurrence was seen in one patient with SCC with positive tumour margin and other two did not show recurrence or any complications. Recurrence was treated with re-surgery and topical Mytomycin C on and off cycles (0.04%).

Limitations of study were small sample size and short term follow-up.

**CONCLUSION**

Clinical picture of OSSN in non-HIV patients showed gelatinous, cystic and papillomatous lesions in 3 cases respectively and histo-pathological picture showed moderately differentiated squamous cell carcinoma in 2 cases and dysplasia in one case which is similar to manifestations in HIV patients in related studies. Early diagnosis and appropriate treatment with wide excision and topical cyclosporine (0.05%) results in better outcome by preventing recurrences and complications.

**REFERENCES**


