ORIGINAL RESEARCH PAPER
Volume - 11 | Issue - 02 | February - 2022 | PRINT ISSN No. 2277 - 8179 | DOI : 10.36106/ijsr
INTERNATIONAL JOURNAL OF SCIENTIFIC RESEARCH

MAGICAL MITOMYCIN C AS MONOTHERAPY IN OCULAR SURFACE SQUAMOUS NEOPLASIA

Ophthalomology

Dr. Malvika Sharma Government Medical College, Jammu.
Dr. Etti Goyal Government Medical College, Jammu.
Dr. Pranav Gupta Government Medical College, Jammu.
Dr. Ridham Nanda* Government Medical College, Jammu. *Corresponding Author

ABSTRACT

INTRODUCTION: Topical mitomycin C (MMC) has proven to be an efficacious treatment of OSSN. OSSN is a broader terminology involving mild epithelial dysplasia and invasive squamous cell carcinoma as well. Mitomycin C is an antimetabolite that alkylates DNA and disrupts the production of RNA. Studies have reported its efficacy rate to range from 80% to 100%. MMC comes in either 0.02% or 0.04%. The lower concentration is usually prescribed continuously for a month; whereas, the higher concentration may be used for a week followed by 2 to 3 weeks off treatment. The disadvantages of MMC includes ocular pain, possible limbal stem cell loss, and other ocular surface toxicity. **AIM:** To evaluate the role of Mitomycin C (0.04%), as a monotherapy in the treatment of Ocular surface squamous neoplasia. **MATERIAL & METHODS:** Mitomycin C is commercially available as 2mg injection in powdered form. To prepare 0.04% of the same, 5 ml of carboxymethyl cellulose solution is added to powdered mitomycin c making it 0.4mg/ml. This solution is applied directly over the lesion with the help of a bud in a 2 week cycle of treatment and 3 weeks off treatment, during which the patient is kept only on carboxymethyl cellulose eye drops. 5 patients in the age group of 40 years and above with a diagnosis of OSSN were included as our study subjects. The diagnosis of OSSN was made based on the clinical presentation and the cytological picture. **RESULTS:** Post treatment, complete disappearance of the lesion was seen with none of the patients having recurrence when followed for one year. **CONCLUSION:** The use of MMC eye drop in the concentration of 0.04% has shown good clinical results without any serious side effects and with a no recurrence rate during the follow-up period of 1 year when used as monotherapy.

KEYWORDS

INTRODUCTION:

Ocular surface squamous neoplasia (OSSN) refers to conjunctival malignancies which range from mild epithelial dysplasia to invasive squamous cell carcinoma (SCC).[1],[2] The most common risk factor for OSSN include ultraviolet light exposure which causes mutations in the tumor suppressor gene such as p53. Other risk factors include HPV infections with subtypes 16 and 18, HIV infection along with advanced age. Smoking too had shown association with OSSN.[3],[4]

The unique clinical picture of OSSN is epithelial thickening extending onto the peripheral cornea, thereby leaving a prominent corkscrew vascular pattern with a histological appearance of hyperplasia, nuclear hyperchromasia with pleomorphism, and mitotic figures. Histologically, the lesion is graded as conjunctival intraepithelial neoplasia, when it is contained to the basement membrane, and as it invades the epithelium, it is graded between mild and severe neoplasia.[5],[6] The gold standard treatment for OSSN is surgical excision, but recurrence after excision is a major concern.[7] Recurrence rates are reported to range from 5%–33% and few studies mentioned it more than 50%, where margins were found to be positive.[8] Due to very high recurrence rate, conservative medical management using mitomycin is gaining popularity. It mainly acts by inhibiting the production of DNA, thereby inducing cell apoptosis and necrosis, and further, it also suppresses the cellular RNA and protein synthesis.[9],[10] The application of topical chemotherapy had shown a significant reduction in the recurrence rate of OSSN. As such, in India, very few studies have been done to assess the role of MMC in OSSN, and hence, the present study was conducted to evaluate the effectiveness of MMC in ocular surface neoplasia when used as a monotherapy.

AIM:

To evaluate the role of Mitomycin C (0.04%), as a monotherapy in the treatment of Ocular surface squamous neoplasia.

MATERIALS & METHODS:

This prospective hospital based study was conducted for a period of 1 year at a tertiary care hospital in Jammu. Patients in the age group of 40 years and above with a diagnosis of OSSN were included as our study subjects. The diagnosis of OSSN was made based on clinical presentation and the cytological picture which includes limbal involvement, with lesions either in the form of gelatinous, leukoplakic, or papillary form and the presence of feeder vessels and cork screw vascular pattern. Patients who had lesions with scleral involvement, intraocular and orbital involvement, and with any other ocular diseases such as limbal stem cell deficiency, ocular surface disorders, and intraocular tumors; patients with any other systemic illness such as HIV or any other immunocompromised conditions; and pregnant women were excluded from the study.

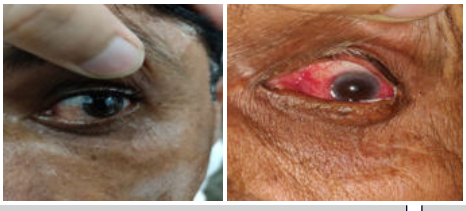
Mitomycin C is commercially available as 2mg injection in powdered form. To prepare 0.04% of the same, 5 ml of carboxymethyl cellulose solution is added to powdered mitomycin c making it 0.4 mg/ml. This solution is applied directly over the lesion with the help of a bud in a 2 week cycle of treatment and 3 weeks off treatment, during which the patient is kept only on carboxymethyl cellulose eye drops. Informed consent was taken from all study subjects.

RESULTS:

After 3 weeks of treatment with topical mitomycin c, complete disappearance of the lesion was seen with none of the patients having recurrence when followed for one year.

Pre treatment :

POST TREATMENT:



DISCUSSION:

In the present study, the mean age of the patients were above 40 years and males were more commonly affected than the females, and a similar type of results was also observed by the studies done earlier on OSSN.[13],[14] Few of the studies done earlier on OSSN had mentioned that chronic sun exposure and smoking were the risk factor for OSSN,our study showed a similar association with both risk factors.[15],[16]

The common chemotherapy agent used for OSSN intra- and postoperatively was 5-flurouracil, MMC, or interferon. Considering the cost factor and minimal adverse events, we selected MMC as treatment therapy for assessing its efficacy in the treatment of OSSN.[11],[12]

In our study, we used the drug concentration as 0.04% for two weeks with a three week off treatment regime. A total of two such cycles were reapeated. The results of our study showed a good clinical response with no recurrence rate at the end of 1 year of follow-up.None of the patients experienced any adverse effect during the treatment.

CONCLUSION:

The use of MMC eye drop in the concentration of 0.04% has shown good clinical results without any serious side effects and with a no recurrence rate during the follow-up period of 1 year when used as monotherapy.

Conflicts of interest: There are no conflicts of interest.

REFERENCES

1. Lee GA, Hirst LW. Ocular surface squamous neoplasia. Surv Ophthalmol 1995;39:429-50.
2. Shields CL, Chien JL, Surakiatchanukul T, Sioufi K, Lally SE, Shields JA. Conjunctival tumors: Review of clinical features, risks, biomarkers, and outcomes: The 2017 J. Donald M. Gass Lecture. Asia Pac J Ophthalmol (Phila) 2017;6:109-20.
3. Shields CL, Demirci H, Karatza E, Shields JA. Clinical survey of 1643 melanocytic and nonmelanocytic conjunctival tumors. Ophthalmology 2004;111:1747-54.
4. Lee GA, Hirst LW. Incidence of ocular surface epithelial dysplasia in metropolitan Brisbane. A 10-year survey. Arch Ophthalmol 1992;110:525-7.
5. Gichuhi S, Irlam JH. Interventions for squamous cell carcinoma of the conjunctiva in HIVinfected individuals. Cochrane Database Syst Rev 2013:CD005643. doi: 10.1002/14651858.
6. Kim RY, Seiff SR, Howes EL Jr, O'Donnell JJ. Necrotizing scleritis secondary to conjunctival squamous cell carcinoma in acquired immunodeficiency syndrome. Am J Ophthalmol 1990;109:231-3.
7. Ip MH, Coroneo MT. Treatment of previously refractory ocular surface squamous neoplasia with topical cidofovir. JAMA Ophthalmol 2017;135:500-2.
8. Kabra RC, Khaitan IA. Comparative analysis of clinical factors associated with ocular surface squamous neoplasia in HIV infected and non HIV patients. J Clin Diagn Res 2015;9:NC01-3.
9. Chen C, Louis D, Dodd T, Muecke J. Mitomycin C as an adjunct in the treatment of localised ocular surface squamous neoplasia. Br J Ophthalmol 2004;88:17-8.
10. Rahimi F, Alipour F, Ghazizadeh Hashemi H, Hashemian MN, Mehrdad R. Topical mitomycin-C for treatment of partially-excised ocular surface squamous neoplasia. Arch Iran Med 2009;12:55-9.
11. Frucht-Pery J, Sugar J, Baum J, Sutphin JE, Pe'er J, Savir H, et al. Mitomycin C treatment for conjunctival-corneal intraepithelial neoplasia: A multicenter experience. Ophthalmology 1997;104:2085-93.
12. Wilson MW, Hungerford JL, George SM, Madreperla SA. Topical mitomycin C for the treatment of conjunctival and corneal epithelial dysplasia and neoplasia. Am J Ophthalmol 1997;124:303-11.
13. Tunc M, Char DH, Crawford B, Miller T. Intraepithelial and invasive squamous cell carcinoma of the conjunctiva: Analysis of 60 cases. Br J Ophthalmol 1999;83:98-103.
14. Tabin G, Levin S, Snibson G, Loughnan M, Taylor H. Late recurrences and the necessity for long-term follow-up in corneal and conjunctival intraepithelial neoplasia. Ophthalmology 1997;104:485-92.
15. McKelvie PA, Daniell M, McNab A, Loughnan M, Santamaria JD. Squamous cell carcinoma of the conjunctiva: A series of 26 cases. Br J Ophthalmol 2002;86:168-73.
16. Napora C, Cohen EJ, Genvert GI, Presson AC, Arentsen JJ, Eagle RC, et al. Factors associated with conjunctival intraepithelial neoplasia: A case control study. Ophthalmic Surg 1990;21:27-30.