

## “Study of histological spectrum of Pterygium- “Is Pterygium A Premalignant Condition”

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### Abstract:

**Introduction:** Pterygium is a superficial, elevated, fibrovascular growth in bulbar subconjunctival tissue and is a degenerative lesion which is usually excised either for cosmetic reason or when it interferes with vision. This condition is more common in people where the eye is exposed to UV radiation.

**Materials and Methods:** In this archival study 60 blocks of excised pterygium received over a period of 1 year revived in Pathology department of G.R. Medical college, Gwalior. The clinical details of pterygium included were- position and grade. Most of our cases belonged to the age group between 50-70 years and it showed mild female preponderance. This tissue was submitted for histological examination.

**Result:** Majority of the patients belonged to the age group between 50 and 70 years and there was a mild female preponderance in our study. 81% cases of the lesion were nasal, 08% of the cases of pterygia belong to grade I, 40% belong to grade 2, and 52% cases belong to grade 3. 92% Pterygia biopsy showed histologically mild hyperplasia of the lining epithelium. There was dysplasia of epithelium in 05% of cases. 03% of cases showed features of well differentiated squamous cell carcinoma.

**Conclusion:** The result showed a spectrum of lesions- hyperplasia, dysplasia and keratinizing squamous cell carcinoma. Pterygium is an aggressive hyperplasia of the fibrovascular tissue and along with this it can also show mild to severe degree of dysplasia. Though we had two cases (03%), it could have arisen denovo from the conjunctiva and not arose from the pterygium.

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### I. Introduction

Pterygium is a triangular conjunctivo-epithelial growth arising from the bulbar conjunctiva and overgrowing the cornea sometimes causing vision loss(1). Pterygium can be either slow growing with low recurrence rate or can be aggressive and proliferating fast and growing on to the cornea. This aggressive type can recur after excision(2). Pterygium is prevalent in tropical, equatorial and peri-equatorial areas (3,4) and wind, particulate matter, chemical air pollution and ultraviolet radiation are all proposed to be risk factors (4,5,6). Although pterygium has worldwide distribution it is most commonly seen in regions with warm and dry climates. Along with Pterygium Pinguecula also considered to be due to solar radiation(8). Solar induced carcinoma of conjunctiva seems to be at the malignant end of growth of conjunctiva, the benign being the pterygium. Probably the histological changes like dysplasia that is seen in pterygium could be a premalignant condition(8). Males are affected twice more commonly than females and they were affected most commonly in their fourth decade. But there was an increase rate of incidence between 20 and 49 years(9). An analysis also show that there were some families showing dominant mode of inheritance but on the contrary it was found that most of the cases were sporadic (10).

Pterygium is more common in nasal aspect than on the temporal aspect, this lesion could be symptomatic, when symptomatic it cause redness, foreign body sensation, irritation and mild inflammation on the side of pterygium. When the pterygium advances on the cornea there will be blurring of vision and sometimes visual obstruction. Advanced pterygium causes other visual defects.

Though pterygium is benign condition and needs only observation and treatment for the non specific symptoms, it becomes necessary to be excised when the lesion overgrows the cornea. Such lesion seem to be aggressive and also locally invasive and when histologically studied it showed mild dysplasia and even carcinoma in situ(11)

Pterygium is the elastic degeneration of the collagen along with fibrovascular proliferation underneath the conjunctival epithelium. The collagen in the region of elastic degeneration appears basophilic in H&E staining. On the contrary recently it has been seen that pterygium is growth disorder due to decrease in apoptosis (12,13,14). Along with UV light (15) the HPV infection(7) is also suspected to be causative factor for these lesion. In this clinical setting our study aimed at looking into the histological spectrum of the various pterygia and to study if any malignancy was arising in the pterygium.

### II. Materials and methods

Our study is an archival study of 60 blocks of pterygia received over the period of one year in the department of pathology G.R.M.C, Gwalior. The clinical details of pterygium were also included regarding the position and grade. The age group study ranged from 50 to 70 years including both male and female, with a mild female preponderance.

### III. Result

The cases of pterygium in our study the age group was between 50 and 70 years, pterygium was slightly more common in female than males just like in various studies. The most common position was nasal (81%). The pterygium was also graded, we found 08% belonged to grade-I, 40% belonged to grade-II and 50% belonged to grade-III. The pterygium when analysed histologically predominantly (92%) showed mild hyperplasia of the lining epithelium, 05% of pterygia showed mild to severe dysplasia and 03% of cases showed feature of squamous cell carcinoma. Hence we cannot decide whether the malignancy arose from a pterygium or was denovo in nature. Analysis of P53 status in these lesions could probably show the progression from hyperplasia to dysplasia and to malignancy.

### IV. Discussion

The present study carried out analysed the male female ratio, age of the patient, the grade of pterygium and the position of pterygium and the histology of the pterygium. The male female ratio when analysed in our study showed that there was mild female preponderance which was unlike the other study done by Skundu W. et al (10). which showed a high incidence in males and a study concluded by Bhardwaj et al. (16) and Lin A Stern G et al. (9) where they found equal distribution in both males and females. Another study conducted by S. Sarkar et al (17) observed that there was female preponderance similar to our observation. In our study the commonest position was of nasal which is similar as when compared to study by S Sarkar et al.

In our study a high incidence of pterygium was commonest between 50 and 70 years and this partially correlated with study conducted by Bhardwaj et al. and also correlated with study conducted by Lin A Stern G et al. Study conducted by S. Sarkar et al. also had similar results like in our study where pterygium was more common in older age group. All of our cases were primary pterygium. S. Sarkar et al. observed that in the age group 51 and 60 were recurrent lesions.

Our study observed predominantly of grade -III lesion (52%), this study was similar to study conducted by Bhardwaj et al. who also found a predominant of grade -III and their study also showed grade -II most common which was similar to observation in our study. Most of the authors studied the hours of exposure of the conjunctiva to UV light, we did not have any history relating to UV exposure in our study.

In our study we found the predominant histology (92%) was hyperplasia of the lining epithelium and this was of squamous type similar to what was observed by Chan Cordelia et al. (6). In one of the cases we found goblet cell hyperplasia similar to the finding of study conducted by S Sarkar et al. 05% of pterygia in our study showed mild to severe dysplasia but a study conducted by S. Sarkar et al 24.6%. 03% of our study showed features of well differentiated squamous cell carcinoma which is comparable to study conducted by S Sarkar et al. who also found 03.3% of micro invasive squamous cell carcinoma. In a study conducted by Mc Kelvie's showed 26.9% of cases showing squamous cell carcinoma.

### V. Conclusion

Pterygium is a disorder which is related to UV radiation as it is predominantly seen in persons who are exposed to sunlight and it is also familiar. This lesion when studied predominantly showed features of squamous hyperplasia of the lining epithelium. The pterygia can also show the features of dysplasia. The 03% of malignancy which was recorded in our study may not be concluded as a denovo lesion or a continuum of the hyperplastic pterygium. We can also conclude that to analyse the continuum of hyperplasia /dysplasia or carcinoma, all pterygia that are excised should be analysed histologically.

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