ISSN: 2581 – 3633
PubMed - National Library of Medicine - ID: 101745081

International Journal of Medical Science and Advanced Clinical Research (IJMACR)

Available Online at:www.ijmacr.com

Volume – 6, Issue – 2, March - 2023, Page No. : 424 - 429

A study on correlation between histopathological changes and clinical manifestations in primary pterygium

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How to citation this article: Dr. Pavana Acharya**,** Dr. Kavitha C V**,** Dr. Purushotham R**,** Dr. Sreelekshmi S R, Dr. Sandeep K, Dr. Akshatha P Javagal, Dr. Narendra N, "A study on correlation between histopathological changes and clinical manifestations in primary pterygium", IJMACR- March - 2023, Volume – 6, Issue - 2, P. No. 424 – 429.

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Type of Publication: Original Research Article

Conflicts of Interest: Nil

Abstract

Background: His to pathological changes that occur in pterygium and its correlation with clinical features will help in better understanding of etiopathogenesis of this disease. It facilitates appropriate and adequate treatment for optimal outcome.

Objective: To evaluate correlation between clinical mani festations of primary pterygium & its his to pathological features.

Methods: Prospective study of 35 eyes with primary pterygium undergoing surgical excision. Preoperative features like fleshiness (Tan grading), the extent of progression (Youg son grading), fibrosis & in flamma

tory activity were noted. Post excision, his to pathological characteristics like vascularity, elastosis, fibrosis, and inflammatory cell infiltration were noted and correlated with clinical characteristics.

Results: Clinically majority of patients were of Tan T2 grading (45.7%) & Youg son G2 grading (54.3%). Fleshiness showed a correlation with vascularity(p-0.01). The extent of progression clinically correlated with vascularity and degeneration even though statistically not significant.

Fibrosis clinically showed a strong correlation with fibrosis on HPE (p-0.001), and moreover, clinically fleshy and extensive pterygium had minimal fibrosis. In flammatory activity statistically showed a strong positive correlation with HPE.

Conclusion: Significant correlation between clinical manifestations of Pterygium & histopathological characteristics was noted. This helps in an in-depth understanding of the etiopathogenesis of Pterygium and paves the way for further studies.

Keywords: Pterygium, clinical feature, histopathology

Introduction

Pterygium is a triangular fibrovascular sub-epithelial ingrowth of degenerative bulbar conjunctival tissue with varying degrees of progression and intermittent inflammation. Pterygium etiologies include hot climates, response to ultraviolet exposure, chronic surface dry ness, and HPV virus association[3].

His to pathological changes in pterygium include epithelial change, elastoid degeneration, fibro vascular proliferation, leukocytic in filtration, fibrosis, and angiogenesis[2].

His to pathological changes that occur in pterygium and their correlation with clinical features will help in a better understanding of the etiopathogenesis of this disease. It facilitates appropriate and adequate treatment for optimal outcomes.

Objective

- To study various clinical features of pterygium like fleshiness, the extent of progression, fibrosis, and in flammatory activity.
- To correlate the above findings with various his to pathological characteristics like vascularity, elastotic degeneration, fibrosis, and inflammatory cell infiltration.

Methodology

A prospective study was conducted in 35 patients undergoing pterygium excision with conjunctival limbal autograft in the Department of Ophthalmology at HIMS Teaching Hospital, Hassan for a period of 6 months from June 2022 to December 2022. Patients with primary pterygium were included in the study. Patients who did not give consent, recurrent pterygium, pseudo pterygium, with suspicion of OSSN were excluded.

Patients fulfilling the inclusion criteria were recruited into the study. The aims and objectives of the intended study were properly explained to the subjects and informed consent was taken. Pterygium was photo graphed before surgery.

The lesion was excised in toto and conjunctival limbal autograft was done. Tissue specimens were sent for histopathologic examination. Clinical findings and his to pathologic changes were correlated.

Table 1:

Clinical features noted on slit lamp examination
1)Fleshiness (TAN GRADING).
2)Extent of progression (YOUGSON GRADING).
3)Amount of fibrosis.
4)Inflammatory activity.

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Table 2:

Tan grading- Fleshiness of pterygium	
T1 (atrophic)	Episcleral vessels underlying the body of the pterygium are unobscured & seen
T2 (inter mediate)	Episcleral vessels underlying partially obscured & indistinctly seen
T3 (fleshy)	Episcleral vessels underlying obscured

Table 3:

Yougson grading- Extent of progression of pterygium	
1.	Ptreygium invading <1.5mm of cornea
2.	Ptreygium invading <half the radius of cornea
3.	Ptreygium invading >half the radius of cornea
4.	Ptreygium almost reaching the Centre of the cornea

Clinically fibrosed pterygium includes white, avascular, shriveled pterygium and inflammatory pterygium were more symptomatic.

Table 4:

Histopathological findings observed
1) Vascularity
2) Elastotic Degeneration
3) Fibrosis
4)Inflammatory cell infiltration

Results

35 patients including 25 female and 10 male subjects with a mean age of 46.85 years (41-50 years-28.6%) were included. Clinical features noted were fleshiness, the extent of progression, fibrosis, and inflammatory activity. The fleshiness of the pterygium graded according to TAN grading showed T1 in 4 (11.4%), T2 in 16 (45.7%), and T3 in 15(42.9%). The extent of progression of pterygium (Yougson's grading) was graded as G1 4 (11.4%), G2 19 (53.4%), G3 10 (28.6%), and G4 2 (5.7%). Fibrosis was positive in 11 (31.4%). In flammatory activity present in 22 (62.9%)

Post excision, his to pathological characteristics like Vascularity, Elastosis, Fibrosis, and Inflammatory cell infiltration were noted. His to pathologically 28(80%) were vascular pterygium with 22 (62.9%) elastotic degeneration present. Fibrosis was present in only 8 (22. 9%) cases and 22 (62.9%) cases with inflammatory cell infiltration present.

The clinical findings and histopathologic changes of pterygium were correlated for a better understanding of the etiopathogenesis of Pterygium. Fleshiness showed a correlation with vascularity (p-0.01). The extent of progression clinically correlated with vascularity and degeneration even though statistically not significant. Fibrosis clinically showed a strong correlation with fibrosis on HPE (p-0.001), and clinically fleshy and extensive pterygium had minimal fibrosis. Inflammatory activity statistically showed a strong positive correlation with HPE.

Figure 1

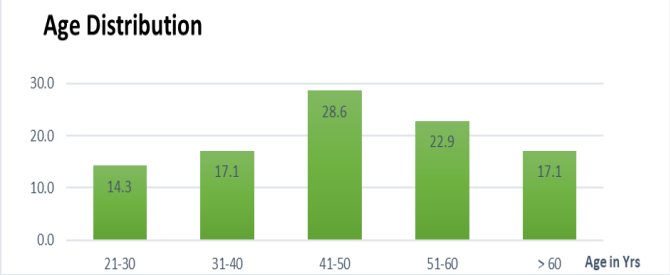


Figure 2

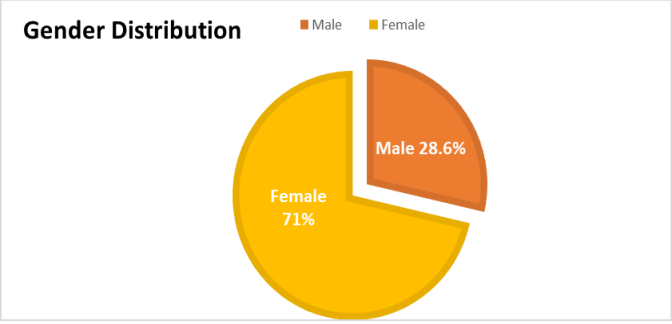
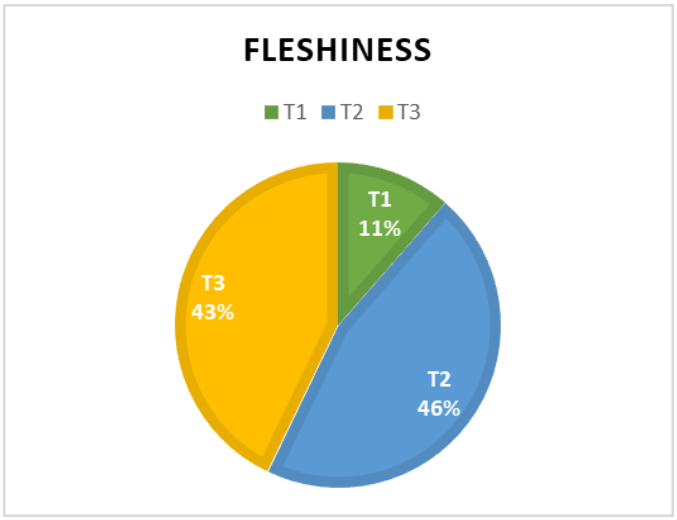
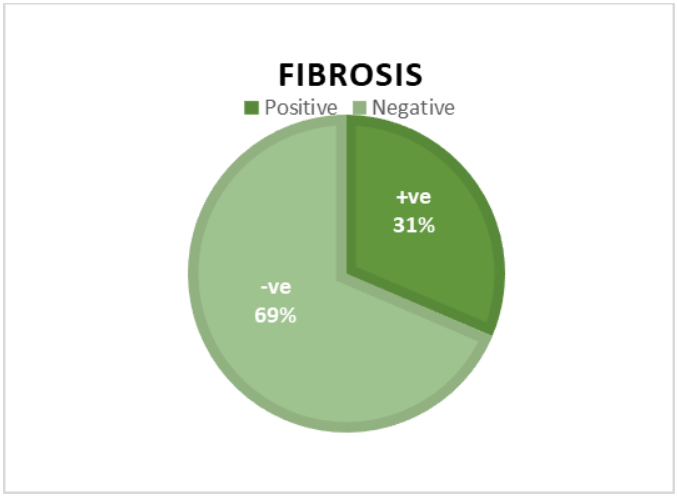


Figure 3: clinical features

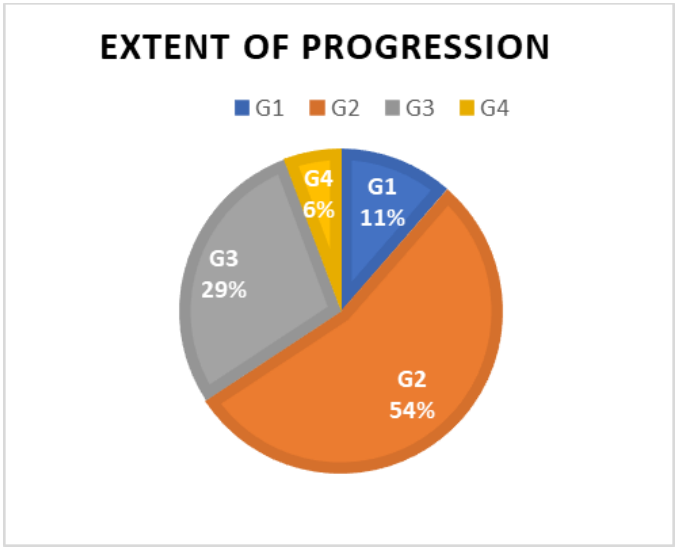
3a) fleshiness



3b)Extent of progression



3c) Fibrosis



3d) Inflammatory activity

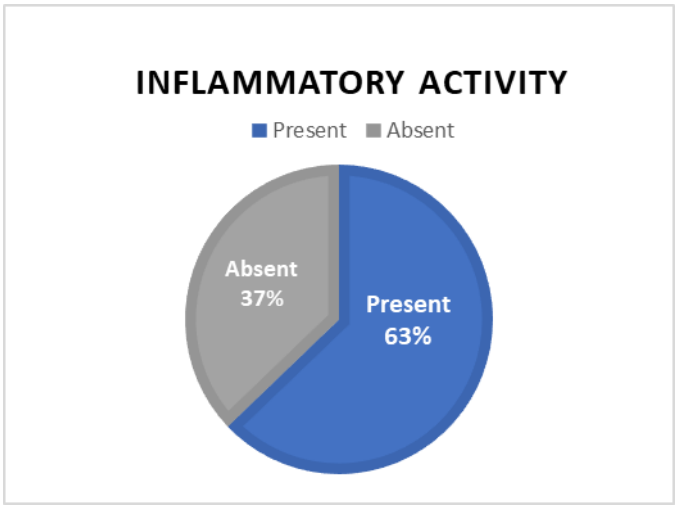
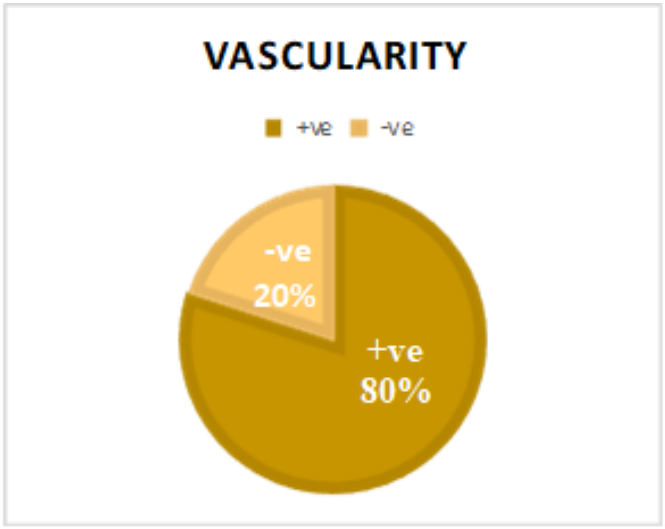
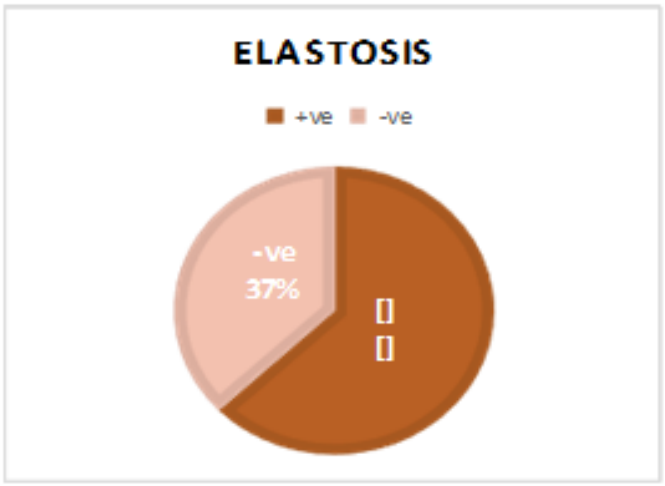


Figure 4: histopathological features

4a) Vascularity



4b) Elastosis



4c) Fibrosis

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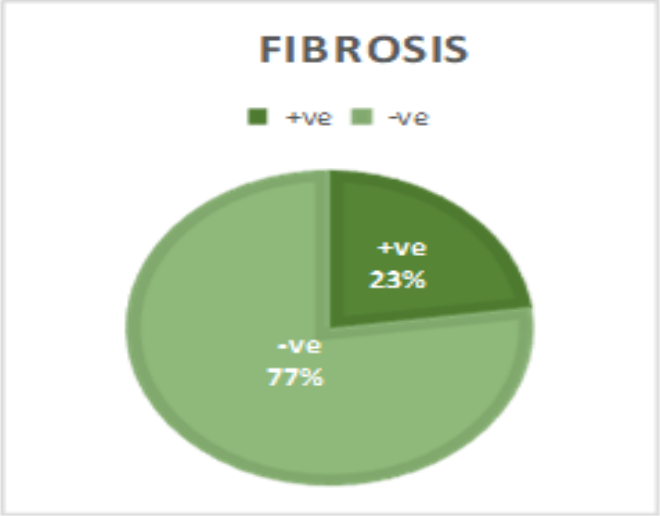

4d) Inflammatory activity

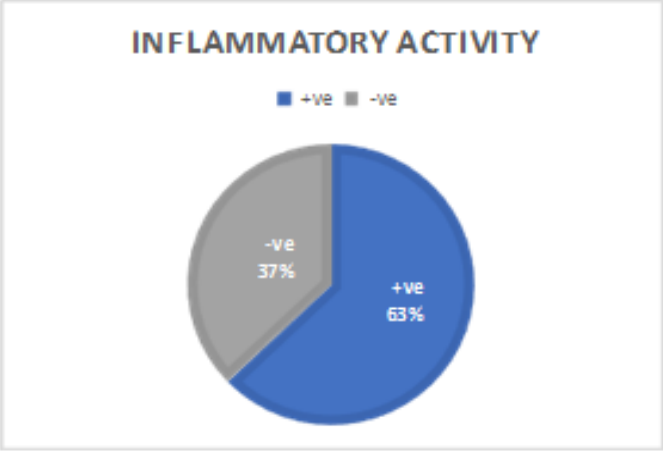

Table 5: correlations between pterygium Fleshiness and various hype features.

Histopathologic features		Clinical feature - fleshiness			Correlation	
		T1	T2	T3	P Value	Significance
Vascularity	+ve	1	13	14	0.01	Sig
	-ve	3	3	1		
Elastosis	+ve	2	8	12	0.192	Not Sig
	-ve	2	8	3		
Fibrosis	+ve	3	3	2	0.02	Sig
	-ve	1	13	13		

Discussion

Despite being a very common entity, exact etiopathogenesis remains an enigma. Detailed his to pathological analysis of pterygium and its correlation with clinical features aims to provide a better understanding of etiopatho genesis, clinical presentation, management options, and prognosis of this entity

This study found significant associations between clinical and histopathologic changes in pterygia.

In our study, 50% of patients were 41-60 years of age; similar to the study by Golu et al where 33% were of age >50yrs.[5] 71%female and 28.6% male showing a female predominance; in contrast to the study by Reda et al et al where most patients were male (59.6%).[3]

A significant correlation was noted in fleshiness with vascularity (p-value-0.01) in this study; in contrast to the study by Safi *et al*. where vascularity and fleshiness of pterygium were only marginally correlated with each other(p-value-0.038).[2]

A study by Reda et al showed redness and fleshiness were positively correlated with lesion dimensions over the cornea. was similar to this study showing a correlation between vascularity and the extent of prog ression.[3]

A study by Safi et al showed pterygium redness showed a significant correlation with vascular density (P = 0.04), and pterygium fleshiness had a significant correlation with stromal fibrosis (P = 0.04) was similar to our study showing a significant correlation between vascularity and fibrosis (P=0.001).[2]

A study by Safi et al showed no correlation between leukocytic infiltration and a clinical feature whereas this study shows inflammatory activity statistically showed a strong positive correlation with HPE.[2]

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Conclusion

A significant correlation between clinical manifestations of Pterygium & histopathological characteristics was noted in this study. Since pterygium is a very commonly encountered entity without any evidence of malignant potential, histopathology of every case is not feasible. So this study aims to provide adequate information based on clinical presentation so that appropriate treatment strategies can be planned. Hence this study also provides a better insight into understanding of etiopathogenesis, clinical presentation, management options and prognosis of pterygium.

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