



Original Research Article

Ocular rosacea: The insight

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ABSTRACT

Introduction: Rosacea is a chronic cutaneous disorder with non specific and variable ocular manifestations. Ocular rosacea is often underdiagnosed, despite the potential for serious sight threatening sequelae.

Aim: The study was designed to determine the incidence of ocular disease among the population of rosacea patients along with evaluating the presence of eye dryness in both the patients and controls using Schirmer 1 test. It correlated the severity of ocular disease with the severity of cutaneous rosacea.

Materials and Methods: A total of 72 patients with facial rosacea were enrolled and evaluated with thorough history, physical and ophthalmological examination for ocular rosacea. Schirmer's test was performed on all patients with ocular rosacea and controls.

Results: Out of 72 patients with facial rosacea, 30 (41.62%) were diagnosed with ocular rosacea. On the Schirmer test, ocular rosacea patients had statistically significant lower value than the control group. There was also a statistically significant difference between mean Schirmer test values of male patients and controls and female patients and controls.

Conclusion: Symptoms of ocular rosacea are not always specific hence underdiagnosed. Ocular features of rosacea in patients presenting with mere cutaneous findings should not be overlooked.

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1. Introduction

The National Rosacea Society Committee identified four subtypes of rosacea: Erythematotelangiectatic, papulopustular, phymatous and ocular.^{1,2} The diagnosis of ocular rosacea should be considered when the patient's eyes have one or more of the following signs and symptoms: Watery or bloodshot appearance, foreign body sensation, dryness, itching, light sensitivity, blurred vision, telangiectasia of the conjunctiva and lid margin or lid and periocular erythema. Meibomian gland dysfunction presenting as chalazion or chronic staphylococcal infection are common signs of rosacea-related ocular disease. Some patients may have decreased visual acuity caused by corneal complications (punctate keratitis, corneal infiltrates/ulcer or marginal keratitis).² Although the frequency of ocular

involvement in patients with rosacea is reported to be somewhere between 3 and 58%, its exact prevalence is not known.³ In approximately 20% of the patients, eye findings may precede skin changes, making the diagnosis more challenging for both the ophthalmologist and the dermatologist.¹ This study was performed to evaluate the ocular signs and symptoms of rosacea in an Indian population presenting to a tertiary health care centre.

2. Aim

The study was designed to

1. Determine the incidence of ocular disease among the population of rosacea patients
2. To objectively determine the presence of eye dryness in both the patients and controls using Schirmer 1 test.

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3. Correlate the severity of ocular disease with the severity of cutaneous rosacea

3. Materials and Methods

The study was conducted in Dermatology outdoor of a tertiary care hospital wherein 72 adult facial rosacea patients (32 men and 40 women) with a mean age of 35.8 years (range = 25 - 63) years were enrolled in this study using simple sequential sampling. All patients were questioned and thorough medical history and physical examination including skin manifestations was undertaken and recorded after taking written consent. Clearance from the Ethical Committee of the institute was taken. Each major sign and symptom of rosacea was classified into three groups as shown in Table 1. After skin examination, we referred all the 72 patients to an ophthalmology clinic of the same hospital. The ophthalmologist performed a thorough examination of the eyelids, conjunctiva and cornea via slit lamps. Ocular signs including lid, conjunctival, corneal, episcleral, and scleral manifestations as well as charted observations of the iris, lens, intraocular pressures (IOPs), best corrected visual acuity (VA), and fundoscopic examination were recorded.

Schirmer 1 test was performed on all patients and controls. With the use of the Schirmer test without anesthesia, the amount of aqueous tear secretion of 30 ocular rosacea patients (18 women, 12 men) with rosacea was compared with that of 30 patients with melanocytic nevi (18 women, 12 men) without rosacea who served as age- and sex-matched controls. The criteria of minimum 4 mm of strip wetting, were used to indicate the lower limit of normal aqueous tear secretion. Results were interpreted as Normal ≥ 15 mm, Mild 14-9 mm and Moderate 8-4 mm wetting of the paper after 5 minutes.

4. Results

Out of total 72 patients diagnosed with facial rosacea, 30 (41.62%) were diagnosed with ocular rosacea. The Male: Female ratio was 1:1.5. Thirteen patients with ophthalmic manifestations had mild to moderate erythematotelangiectatic rosacea, 16 had moderate papulopustular rosacea while only 1 had phymatous rosacea. Table 2 enlists the various symptoms complained by the patients. Of these 22 had symptoms pertaining to ocular manifestations. Dryness in 20 (56.67%) patients was the leading complaint followed by Stinginess and Burning sensation in 14 (46.67%) and 12(40%) patients respectively (Table 2). The ophthalmological examination led to the unmasking of various signs of which conjunctivitis was the commonest in 10 (33.33%) patients (Table 3).

Results of the Schirmer 1 test are given in Table 4. Ocular rosacea patients had a total mean value of 7.6mm which was considerably lower than that of control group 18.5 mm.

This difference proved to be statistically significant ($p < 0.05$). There was also a statistically significant difference between mean Schirmer test values of male patients and controls and female patients and controls. Of the ocular rosacea patients, 56.67% had less than 8 mm of strip wetting compared with 23.3% of control patients ($p < 0.05$). The prevalence of documented meibomian gland dysfunction i.e dry eyes ($p < 0.05$), telangiectasia ($p = 0.008$), was significantly higher in patients when compared with controls. Of the conjunctival signs evaluated, only the presence of interpalpebral conjunctival hyperemia ($p = 0.02$) was found to be significantly higher in patients. Corneal changes were seen in 1 (3.33%) patients in the form of beginning of superficial punctate keratitis. The corneal, episcleral, scleral, and lens findings did not demonstrate a statistically significant difference between the two groups. Difference between IOP, fundoscopic findings and VA were not significantly different.



Fig. 1: Schirmer's test being performed in a patient

5. Discussion

Rosacea is a chronic cutaneous disorder that causes high psychological strain in those affected. The ocular manifestations of rosacea are commonly nonspecific and variable. The etiology of the inflammation is unknown and there is no diagnostic test for the disease. Ocular rosacea is often underdiagnosed, despite the potential for serious sight-threatening sequelae.

The Male: Female ratio in our study was found to be 1:1.5. Ocular rosacea affects both genders equally.⁴ The incidence of ocular rosacea varies among ophthalmologic and dermatologic studies, ranging from 6-72%, being more prevalent in ophthalmology clinics.⁵⁻⁷ Rosacea may be found in early childhood as well as in the elderly, but it most commonly affects middle-aged adults.⁸ The mean age in our study was found to be 35.8 years.

Table 1: Classification of ocular rosacea

Feature/ Grading	Mild	Moderate	Severe
Flushing	Instant flushing	Duration of less than 15 min	More than 15 min of flushing
Erythema	Light red erythema	Red erythema,	Purple red erythema,
Telangiectasia	Up to 10 lines	10-20 lines	More than 20
Papules or pustules	Less than 10	10-20	More that 20
Nodules and plaques	1-3	4-10	More than 10

Table 2: Symptoms of the patients

Ocular Symptoms	Number of patients (%)
1. Dryness	20 (66.67%)
2. Stinging	14 (46.67%)
3. Burning sensation	12 (40%)
4. foreign body sensation	12 (40%)
5. Photosensitivity	8 (26.67%)
6. Excessive watering	2 (6.67%)
Total number of patients	68

Table 3: Signs in the patients

Ocular Signs	Number of Patients (%)
1. Conjunctivitis	10 (33.33%)
2. Telangiectasias	9 (30%)
3. Recurrent chalazion	8 (26.67%)
4. Eyelid swelling	1 (3.33%)
5. Blepharitis	1 (3.33%)
6. Superficial punctate keratitis	1 (3.33%)
Total number of patients	30

Table 4: Results of SchirmerI test in both patients and controls (L.E: left eye;R.E : Right eye)

	Ocular Rosacea patients				Controls			
	Men		Women		Men		Women	
	L.E	R.E	L.E	R.E	L.E	R.E	L.E	R.E
Mean	7.0mm	7.5mm	7.5.mm	8.5mm	17.5mm	19.0mm	18.0mm	19.5mm
Cumulative Mean	7.25mm		8mm		18.25mm		18.75mm	
	7.6mm				18.5mm			

**Fig. 2:** Slit-lamp examination of the eyelid margins reveals telangiectases in a patient with ocular rosacea

Fair-skinned patients of European descent are more commonly affected by rosacea; however, any ethnicity can be afflicted with the disease. It has been suggested that skin pigmentation may obscure identification of the characteristic findings, contributing to underdiagnosis in dark skinned patients.⁹ There have been no data so far in an Indian population showing the prevalence and clinical features of ocular rosacea.

5.1. Lack of diagnostic test

The diagnosis of rosacea is clinical and relies on observation of skin manifestations. In cases in which these are only very subtle, the diagnosis can become very challenging and the disease may remain undiagnosed. In addition, manifestations of ocular rosacea are by no means specific to the disorder alone and other ophthalmologic diseases may present with similar findings, making the diagnosis

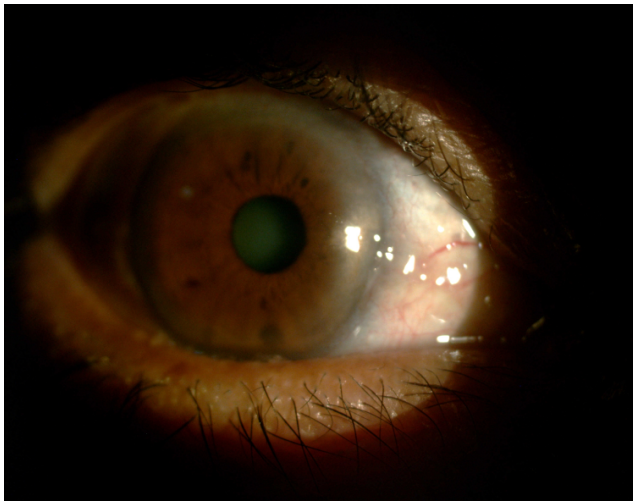


Fig. 3: Superficial punctate keratitis seen in a patient with ocular rosacea

even more difficult and the search for a diagnostic test quite important. Unfortunately, there is not yet a diagnostic test available for either cutaneous or ocular rosacea.¹⁰ No serologic or histologic markers have been described to date. A diagnostic marker may enable earlier diagnosis and treatment, as well as contribute with an etiologic explanation for this troublesome disorder. High abundance of O-linked oligosaccharides in the tears of patients has been found in patients with ocular rosacea.¹¹

5.2. Clinical features

The incidence of ocular manifestations in our rosacea population was found to be 41.62% while other studies have shown to be in the range of 6-58%.¹² This variation probably reflects the difference between sociodemographic profile of population in study, the flare episodes and the means of diagnosis.¹³ The real prevalence of ocular rosacea is highly underestimated because the ophthalmic disease usually remains underdiagnosed as patients focus their attention only to the aesthetic appearance their face.¹³ The most frequent ocular symptom was dryness (66.67%) and stinging of the eyes (46.67%) whereas the most common sign was conjunctivitis (33.33%) and telangiectasias (30%). These findings were consistent with other studies.^{13–18} Patients with ocular rosacea may complain of foreign body sensation, dryness, itching, photophobia and tearing.^{14,19} Decreased visual acuity may result when corneal involvement is present. Ocular manifestations are usually bilateral and, as previously mentioned, can be non-specific.¹⁰ The severity of ocular rosacea symptoms is often not related to the severity of cutaneous manifestations.^{10,14} One study found a significant relationship between ocular involvement and the severity of telangiectasia.¹⁵

5.3. Eyelids and tear film

Tear function test i.e Schirmer 1 (Figure 1) was performed on 30 out of 72 patients in our study as well as 30 controls, to determine the presence and gravity of eye dryness. Although all eyes were above 5mm i.e pathological dry eyes, the total mean of Schirmer tests were 7.6mm in patients which was significantly lower compared with 18.5 mm score of the controls. Dry eyes, with abnormal Schirmer test, were reported in 56-62.5% of patients with ocular rosacea.^{16,20,21} Furthermore male rosacea patients had lower value as compared to female patients which was similar to findings in a study by Lazaridou et al.²² These findings further delineate the fact that rosacea is very often characterized by dry eye and at times is the only presenting symptom/sign. Diminished tear break-up time (TBUT) has also been reported in a large majority of patients with ocular rosacea.^{14,20,21} In our study there was 1 case of lid edema and blepharitis each. Blepharitis and meibomian gland dysfunction are common findings in patients of ocular rosacea.^{6,10} These glands are considered as differentiated sebaceous glands which are target of inflammation in rosacea. Abnormal function leads to thickened secretions, lower tear break up time and consequently eye dryness.²² This dysfunction could be secondary to increased glandular production of free fatty acids due to bacterial lipases or to hyperemia because of facial and angular venous dilatation.^{23–25} Slit-lamp examination of the eyelid margins reveals telangiectases (Figure 2), dilated meibomian glands, excessive seborrhoeic secretion and collarettes around the eyelashes.¹⁰ Recurrent hordeolum/chalazion and tear film insufficiency are commonly observed as a consequence of meibomian gland dysfunction.^{4,10} Though facial edema is an uncommon manifestation,²⁶ periorbital edema and eyelid edema has been reported in the literature.^{26,27}

5.4. Conjunctiva

In our study, conjunctivitis was seen in 10 (33.33%) patients. Starr and McDonald described a characteristic ‘arcade’ of dilated vessels in the superficial limbal plexus, usually present in the inferior quadrants and not extending into the cornea in ocular patients of rosacea.²⁸ Chronic conjunctivitis characterized by interpalpebral bulbar conjunctival hyperemia may be present,^{7,10} as well as a chronic papillary reaction.⁶ Akpek et al described cicatricial conjunctivitis (lower lid) as one of the most common ocular surface findings in rosacea.²⁹ There have been reports of chronic cicatrizing conjunctivitis (upper lids), mimicking the classic findings in trachoma, pinguecula and conjunctival fibrosis have been reported in up to 20% of patients with ocular rosacea.^{30–32}

5.5. Cornea

Corneal manifestations may occur in up to 33% of patients with rosacea^{6,28} with the inferior cornea being more commonly affected.¹⁰ In our study one (3.33%) patient showed the features of superficial punctate keratitis (Figure 3). Corneal involvement typically starts with superficial punctate keratitis on the lower third of the cornea.²⁸ Peripheral neovascularization associated with subepithelial marginal triangular infiltrates along the advancing vascular border can also occur.²⁸ If left untreated, these infiltrates may progress centrally and lead to stromal ulceration and even perforation.^{10,33,34} Recurrent corneal epithelial erosions have been reported in patients with ocular rosacea.^{17,29,35} Other uncommon corneal findings include pseudodendritic ulcer and pseudokeratoconus, presenting with inferior corneal thinning and high astigmatism, secondary infectious keratitis.³⁶

5.6. Other ocular findings

Other ocular findings include iritis, episcleritis and scleritis.^{10,37} In our study, one case of episcleritis was found who had moderate papulopustular rosacea. Decreased visual acuity can also be seen which may result from epithelial ulceration, surface irregularities and corneal scarring.³⁶ However, in contrast our study did show any severe complications like corneal neovascularization, thinning and perforation, scleral ulcers.

In our study, surprisingly, we found a significant relationship between the severity of telangiectasia and ocular involvement. Similar finding was reported in a study done in Tehran.¹⁵ This finding is not in alignment with the previous studies that claim that the ophthalmologic complications of rosacea are completely independent of the severity of facial rosacea.¹² On the other hand, it seems that the significant relationship between the severity of telangiectasia and eye lesions in our study might be a coincidence. Larger studies with more number of patients need to be undertaken to further extrapolate this fact.

5.7. Differential Diagnosis

The differential diagnosis of ocular rosacea may include staphylococcal and seborrheic blepharokerato conjunctivitis, and sebaceous gland carcinoma.³⁶ Given that there is currently no diagnostic test for rosacea, distinguishing ocular rosacea from staphylococcal and seborrheic blepharokerato conjunctivitis in patients in which ocular signs precede skin findings may be difficult. Sebaceous gland carcinoma is often misdiagnosed as chalazion and early recognition is often challenging. For this reason, recurrent chalazia should be excised and sent for histopathology.³⁶ Thus it needs a good clinical suspicion by both a dermatologist and ophthalmologist to get to diagnosis in a setting of minimal but recurrent oculocutaneous symptoms.

6. Conclusion

Ocular rosacea in its most developed form still remains the domain of the ophthalmologist, still the role of a dermatologist in early diagnosis and management cannot be undermined. Looking and asking for ophthalmic symptoms in any suspected case of rosacea marks an astute clinician. Keeping in mind the clinical symptoms and signs can be a great help to the ailing patients. The findings in our study prove beyond doubt that ocular features of rosacea in patients presenting with mere cutaneous findings should not be overlooked. Furthermore Eye care professionals need to be aware of the presence of rosacea to appropriately treat ocular surface disease that is not responding as expected to standard topical therapy. Ocular rosacea, in particular, is often left undiagnosed as no specific test is available to confirm the diagnosis. Accurate diagnosis is further complicated because symptoms of ocular rosacea are not always specific to the disorder alone. Other ophthalmic disorders may present with similar findings. Further challenges exist because the severity of ocular symptoms is often not related to the severity of cutaneous findings in rosacea. Our study has found the correlation of telangiectasias with that of ocular rosacea.

7. Acknowledgement

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8. Source of Funding

None.

9. Conflict of Interest

None.

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