ORIGINAL RESEARCH

Assessment of patients with infective keratitis

Dr. Sneh Lata Singh

Assistant Professor, Department of Ophthalmology, Hind Institute of Medical Sciences, Barabanki, UP, India

Corresponding author
Dr. Sneh Lata Singh
Assistant Professor, Department of Ophthalmology, Hind Institute of Medical Sciences, Barabanki, UP, India
Email: rajasekhar1702@gmail.com

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ABSTRACT

Background: The word for inflammations of the cornea is keratitis. Infections of the cornea are recognized as the second leading cause of monocular blindness in the world, ranking behind untreated cataract surgery, especially in impoverished countries and tropical regions generally. The present study was conducted to assess cases of infective keratitis. **Materials & Methods:** 52 patients of infective keratitis of both genders were selected and diagnosed using slit-lamp biomicroscope. Scrapings underwent bacterial and fungal pathogen culture, Gram staining, and potassium hydroxide preparation. **Results:** Out of 52 patients, males were 32 and females were 20. Micro-organisms for corneal ulcers were bacterial isolates in 26, fungal growth in 14 and no organism isolated in 12 cases. The difference was significant (P< 0.05). Bacterial isolates were Micrococcus in 6, staphylococcus aureus in 10, coagulase-negative staphylococci in 3, Klebsiella spp. in 4 and Pseudomonas spp. in 3 cases. Fungus found to be fusarium spp. in 3, unidentified in 2, candida spp. in 6, curvularia spp. in 2, and aspergillus spp. in 1 case. The difference was significant (P< 0.05). **Conclusion:** Candida species, coagulase-negative staphylococci, and staphylococcus aureus. were the pathogens most frequently implicated in infective keratitis.

Key words: Staphylococcus aureus, infective keratitis, Klebsiella

INTRODUCTION

The word for inflammations of the cornea is keratitis. Infections of the cornea are recognized as the second leading cause of monocular blindness in the world, ranking behind untreated cataract surgery, especially in impoverished countries and tropical regions generally.[1] Microbial keratitis is a frequent ocular infection that can possibly be fatal to vision and is caused by bacteria, fungus, viruses, or parasites. stressing how serious corneal ulceration is.[2] Clinical prognosis in microbial keratitis is determined by a multitude of factors, and epidemiological trends varies between countries and even geographical locations within a same nation. Numerous investigations have assessed the causes, treatments, and consequences of microbial infections.Regional differences exist, nonetheless, in corneal ulcer prevalence, risk factors, and prognosis.[3]

For instance, infectious corneal ulcers seem to be spreading like an epidemic and are ten times more common in developing nations than in industrialized ones.[4] Since a variety of species can generate a similar clinical presentation, the clinical diagnosis of infective keratitis cannot definitively identify the causative organisms.[5] The two major and frequently utilized microbiological investigations are culture and direct microscopic identification of causal organisms. On the basis of a clinical and microbiological assessment, prompt antibiotic treatment must be started in order to reduce ocular morbidity.[6]The present study was conducted to assess cases of infective keratitis.

MATERIALS & METHODS

The present study comprised of 52 patients ofinfective keratitis of both genders. All gave their written consent to participate in the study.

Data such as name, age, gender etc. was recorded. An ophthalmologist assessed each subject using a slit-lamp biomicroscope. With a sterile Bard-Parker blade, an ophthalmologist scraped the cornea in a very aseptic manner. Preservative-free 4% lignocaine hydrochloride was infused before the scrape was obtained. Material was then extracted by scraping each ulcer's base and leading edge. Scrapings underwent bacterial and fungal pathogen culture, Gram staining, and potassium hydroxide preparation. Results thus obtained were subjected to statistical analysis. P value less than 0.05was considered significant.

RESULTS

Table I Distribution of patients

Total- 52		
Gender	**Males**	**Females**
Number	32	20

Table I shows that out of 52 patients, males were 32 and females were 20.

Table II Assessment of causative micro-organisms of corneal ulcers

Micro-organisms	Number	P value
Bacterial isolates	26	0.05
Fungal growth	14	
No organism isolated	12	

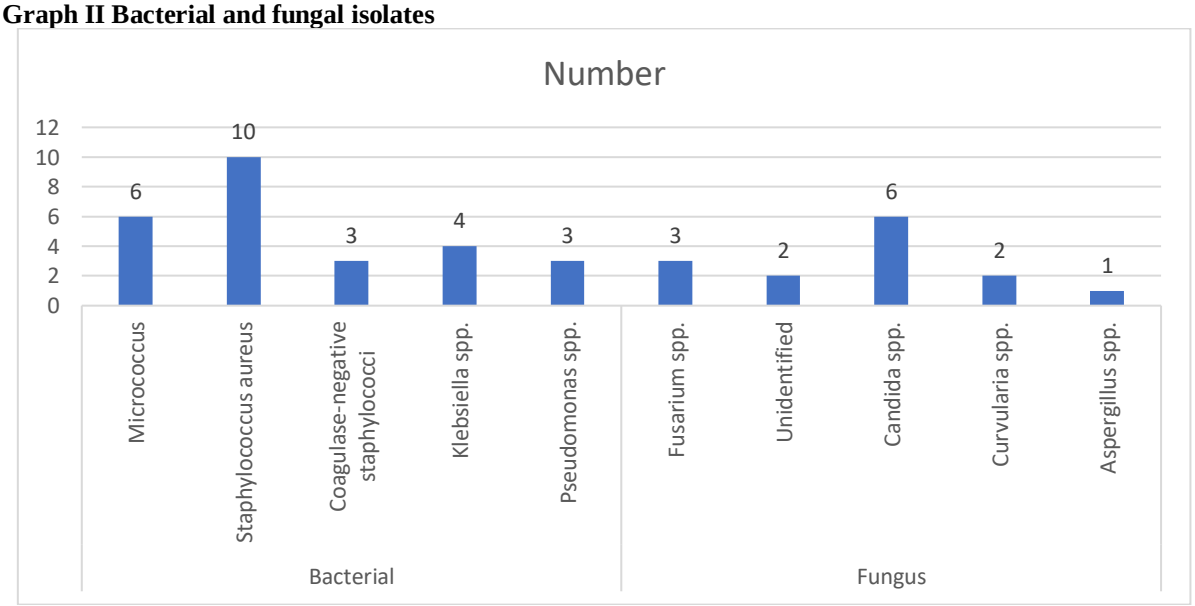
Table II, graph I shows that micro-organisms for corneal ulcers were bacterial isolates in 26, fungal growth in 14 and no organism isolated in 12 cases. The difference was significant (P< 0.05).

Table III Bacterial and fungal isolates

Isolates	Organism	Number	P value
Bacterial	Micrococcus	6	0.05
	Staphylococcus aureus	10	
	Coagulase-negative staphylococci	3	
	Klebsiella spp.	4	
	Pseudomonas spp.	3	
Fungus	Fusarium spp.	3	0.04
	Unidentified	2	
	Candida spp.	6	
	Curvularia spp.	2	
	Aspergillus spp.	1	

Table III, graph I shows that bacterial isolates wereMicrococcus in 6, staphylococcus aureus in 10, coagulase-negative staphylococci in 3, Klebsiella spp. in 4 and Pseudomonas spp. in 3 cases. Fungus found to be fusarium spp. in 3, unidentified in 2, candida spp. in 6, curvularia spp. in 2, and aspergillus spp. in 1 case. The difference was significant (P< 0.05).

Graph II Bacterial and fungal isolates



DISCUSSION

Around the world, infectious keratitis is a significant preventable cause of monocular blindness. It is seen as an ocular emergency that needs to be managed quickly and appropriately to give the patient the best possible visual prognosis.[7] It has been discovered that the etiology and epidemiological patterns of corneal ulceration vary with the patient population, corneal health, geographic location, and climate, and also tend to change over time.[8] Therefore, quick identification, prompt therapy initiation, effective management, and illness prevention all depend on an awareness of the

epidemiological characteristics, risk factors, and etiological agents that are present in a particular area. Thorough laboratory research is required before initiating a particular treatment plan; this includes corneal scraping culture and microscopy for the identification of themicrobial agent.[9]The present study was conducted to assess patients of infective keratitis.

We found that out of 52 patients, males were 32 and females were 20.Vegetable matter, primarily paddy and jute, was identified by Basak et al[10] as the main traumatizing factor for the development of keratitis. In this study, housewives had the highest incidence of keratitis (21.3%), followed by farmers (16.6%), labourers (14.6%), and carpenters (10.6%). Damage caused by wooden objects and vegetable stuff that represents farmers is consistent with prior research.

We found that micro-organisms for corneal ulcers were bacterial isolates in 26, fungal growthin 14 and no organism isolated in 12 cases. Patients with suspected microbial keratitis had their microbiological profile, therapeutic result, and epidemiological parameters established by Gopinathan et al[11] 3563 (60.4%) of the 5897 probable cases of microbial keratitis (bacterial α 1849, 51.9%; fungal α 1360, 38.2%; Acanthamoeba α 86, 2.4%; mixed α 268, 7.5%) were confirmed by culture. Individuals who engaged in agricultural activities had a 1.33-fold increased chance of acquiring microbial keratitis, whereas those who experienced ocular trauma had a 5.33-fold increased risk of developing the condition. Gram stain exhibited a poor sensitivity of 56.6% in the detection of bacteria, although potassium hydroxide with calcofluor white was most sensitive for detecting fungus (90.6%) and Acanthamoeba (84.0%) in corneal scrapings. Staphylococcus epidermidis (42.3%) accounted for the majority of bacterial infections, while Fusarium species (36.6%) was the most common source of fungus infections. Surgical intervention was necessary for a substantially higher proportion of patients (691/1360, 50.8%) with fungal keratitis than those with bacterial (799/1849, 43.2%) and Acanthamoeba (15/86, 17.4%) keratitis. 75.5%, 64.8%, and 90.0% of patients with bacterial, fungal, and Acanthamoeba keratitis, respectively, had a corneal healed scar.

We found that bacterial isolates were Micrococcus in 6, staphylococcus aureus in 10, coagulase-negative staphylococci in 3, Klebsiella spp. in 4 and Pseudomonas spp. in 3 cases. Fungus found to be fusarium spp. in 3, unidentified in 2, candida spp. in 6, curvularia spp. in 2, and aspergillus spp. in 1 case. In the study conducted by Tewari et al[12], 150 corneal scrapings from individuals who had corneal ulcers were assessed. Scrapings underwent bacterial and fungal pathogen culture, Gram staining, and potassium hydroxide preparation. Risk factors and sociodemographic information were documented. Trauma was the determining factor in 90% (135/150) of patients with corneal ulcers and the risk factor for keratitis. The most common cause (46/135) was trauma from wooden objects, which was followed by injuries from stones and vegetable matter (23/135). A microbial etiology was identified in 89 out of 150 scrapings, or 59.3%. 65.1% (58/89) of the 89 positive isolates were bacterial, while 34.9% (31/89) were fungal. Gram-positive cocci made up 60.3% (35/58) of the bacterial isolates, whereas Gram-negative bacilli made up 39.7% (23/58).

CONCLUSION

Authors found that Candida species, coagulase-negative staphylococci, and staphylococcus aureus. were the pathogens most frequently implicated in infective keratitis.

REFERENCES

1. Bharathi MJ, Ramakrishnan R, Vasu S, Meenakshi R, Palaniappan R. Epidemiological characteristics and laboratory diagnosis of fungal keratitis: A three-year study. Indian J Ophthalmol2003;51:315-21.
2. Srinivasan M, Gonzales CA, George C, Cevallus V, Mascarenhas JM, Asokan B, et al. Epidemiology and aetiological diagnosis of corneal ulceration in Madurai, south India. Br J Ophthalmol1997;81:965-71.
3. Agrawal V, Biswas J, Madhavan HN, Mangat G, Reddy MK, Saini JS, et al. Current perspectives in infectious keratitis. Indian J Ophthalmol1994;42:171-92.
4. Bharathi MJ, Ramakrishnan R, Vasu S, Meenakshi R, Shivkumar C, Palaniappan R. Epidemiology of bacterial keratitis in a referral centre in south India. Indian J Med Microbiol2003;21:239-45.
5. Leck AK, Thomas PA, Hagan M, Kaliamurthy, Ackuaku E, John M, et al. Aetiology of suppurative corneal ulcers in Ghana and south India, and epidemiology of fungal keratitis. Br J Ophthalmol2002;86:1211-5.
6. Bharathi MJ, Ramakrishnan R, Vasu S, Meenakshi R, Palaniappan R. Aetiological diagnosis of microbial keratitis in south India. Indian J Med Microbiol2002;20:19-24.
7. Verenkar MP, Borkar S, Pinto MJ, Pradeep N. Study of mycotic keratitis in Goa. Indian J Med Microbiol1998;16:58-60.
8. Bashir G, Shah A, Thokar MA, Rashid S, Shakeel S. Bacterial and fungal profile of corneal ulcers: A prospective study. Indian J PatholMicrobiol2005;48:273-7.
9. Hagan M, Wright E, Newman M, Dolin P, Johnson GJ. Causes of suppurative keratitis in Ghana. Br J Ophthalmol1995;79:1024-8.
10. Basak SK, Basak S, Mohanta A, Bhowmick A. Epidemiological and microbiological diagnosis of suppurative keratitis in Gangetic West Bengal, Eastern India. Indian J Opthalmol2005;53:17-22.
11. Gopinathan U, Sharma S, Garg P, Rao GN. Review of epidemiological features, microbiological diagnosis and treatment outcome of microbial keratitis: experience of over a decade. Indian journal of ophthalmology. 2009 Jul;57(4):273.
12. Tewari A, Sood N, Vegad MM, Mehta DC. Epidemiological and microbiological profile of infective keratitis in Ahmedabad. Indian J Ophthalmol2012;60:267-72.