Research Article

Clinico-microbial correlation of suppurative keratitis

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Abstract

Objectives: 1) To determine the correlation between the clinical characteristics and micro-biological profile of the Suppurative corneal ulcer. 2)To study the mode of onset, contributing and precipitating factors for Suppurative Corneal ulcer. 3) To identify different types of micro-organisms involved in suppurative corneal ulcer and determine the commonest causative organism. **Result:** Farmers (p value- 0.001) and labourers (p value-0.005) were the most affected. The corneal ulcer was more prevalent in the months of Nov-Jan (p value- 0.005) and May-July (p value- 0.0001). Amongst the ocular predisposing factors, ocular injury (p value-0.0002) with vegetative matter and chronic dacryocystitis (p value- 0.001) were the most common. Staphylococcus aureus and Fusarium were the most common isolate found. And no significant difference was found in clinical diagnosis and microbiological profile.
Keywords: correlation, suppurative keratitis.

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INTRODUCTION

Corneal ulcer is a major public health *problem* in the developing world causing prolonged ocular morbidity and loss of vision.[1] Next to cataract, major cause of blindness in the world is corneal blindness, in which ocular trauma and corneal ulceration are significant contributors. Corneal blindness is responsible for 1.5-2 million new cases of monocular blindness every year.[2] In a vast agricultural country like India particularly where primary health care and referral systems are weak, minor eye injuries sustained in agricultural farms often lead to corneal ulceration and loss of vision.[3] Injudicious topical application of cortisone and its derivatives combined with antibiotics may not only favour the growth of fungi but may cause invasive infection[5]. Further, corneal ulcers are commonly associated with some predisposing factors. The important predisposing factors related to corneal ulcer are trauma, chronic dacryocystitis, chronic ocular surface disease, contact lens usage, ocular surgery, corneal anaesthetics abuse, diabetes mellitus, vitamin deficiencies and immunodeficiencies[6]. Patients with compromised cornea due to diseases such as Herpes simplex keratitis or keratoconjunctivitis, bullous keratopathy are also at risk of developing suppurative keratitis .

MATERIALS AND METHODS

Study Design

This is a hospital based Case study of patients having Suppurative Corneal ulcer coming to Ophthalmology OPD, Tertiary care centre.

Inclusion Criteria

1. Patients diagnosed with Suppurative corneal ulcer.
2. Patients giving consent to be part of the study.

Exclusion Criteria

1. Patients diagnosed with Viral Keratitis and non-infectious Keratitis.
2. Patients not giving consent to be part of the study.

Methodology

A standard clinical Proforma was used in all cases with salient points in history, clinical features and laboratory investigations. Examination of anterior segment was done

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in detail with the help of a torch and slit lamp bio-microscope along with fluorescein staining and lacrimal sac syringing. Laboratory investigations like complete blood count, fasting and post prandial blood sugar level, urine examination were carried out. Corneal scraping was done and sent for microbiological investigations like gram and 10% KOH staining and culture examination.

Statistical Test

Pearson Chi Square (X^2) test of significance was used.

OBSERVATIONS AND RESULTS

Table 1

Occupation	Frequency	Percentage(%)	p-value
Farmer	42	38.18	0.001
Labourer	40	36.36	0.005
Home-maker (housewife)	24	9.09	0.4
Student	04	3.63	2.2
Total	**110**	**100**	

Table 2

Season	Frequency	Percentage(%)	p-value
November-January	40	36.36	0.005
February-April	08	7.27	1.7
May-July	45	40.90	0.0001
August-October	17	15.45	0.02
Total	**110**	**100**	

Table 3

Ocular Predisposing Factors	Frequency	Percentage (%)	p-value
Contact Lens	05	4.54	1.5
Ocular trauma	45	40.90	
Vegetative matter-	35	77.77	0.0002
Objects	10	22.23	5.7
Ocular Surface disease	25	22.72	0.5
Chronic Dacryocystitis	43	39.09	0.001
Ocular surgery	20	18.18	0.1

Table 4

Previous Medication	Frequency	Percentage (%)
No H/O previous medication	65	59.10
H/O previous medication (local or systemic)	45	40.90
1) Steroids	15	13.63
2) Antibiotics	25	22.72
3) Steroids+Antibiotics	10	9.09
Total	**110**	**100**

Table 5

Associated systemic disease	Frequency	Percentage (%)	p-value
Hypertension	06	5.45	0.539984
Diabetic	11	10	0.048777
Others	05	4.54	0.286677

Table 6

Staining positivity	Frequency	Percentage	P value
Gram stain	58	59.79	
1) Gram positive org.	40	41.24	0.0002
2) Gram negative org.	18	18.56	0.1
KOH	22	22.68	0.5
Mixed	17	17.52	0.08
Negative stained smear	13	11.82	
Total	**110**	**100**	**Total**

Table 7:

Bacterial isolates	Total
Staphylococcus aureus	20
Streptococci	09
Pneumococci	11
Pseudomonas	05
Proteus	01
E.coli	01
Total	**47**

Table 8:

Fungal isolates	Total
Fusarium	07
Aspergillus flavus	06
Aspergillus fumigatus	03
Aspergillus niger	01
Curvularia	01
Total	**18**

Table 9:

Diagnosis	Bacterial	Fungal	Mixed	Sterile	Total
Clinical	74	27	09	0	110
Microbiological	58	22	17	13	110
p-value	0.373687	0.48858	0.740144	0.0858	

DISCUSSION

110 patients were included in this study. All the patients were diagnosed with suppurative keratitis who attended Ophthalmology OPD, tertiary care centre. Out of 110 patients, 38.18% of the patients were farmers while 36.36% were labourers and this was significantly associated with the occurrence of suppurative keratitis 36.36% of the patients had the occurrence of suppurative keratitis in the months from November-January while 40.90% of the patients had the occurrence from May-July which was significantly associated with Suppurative keratitis 40.90% of the patients had a history of ocular trauma while 39.09% of the patients had chronic dacryocystitis which was significantly associated with suppurative keratitis. Out of 45 patients having history of ocular trauma, 77.77% of the patients had injury with vegetative matter which was significantly associated with suppurative keratitis. Out of 110 patients, 40.90% of the patients gave history of putting some medications. 13.63% patients instilled only antibiotics eyedrops, 22.72% of the patients instilled steroids while 9.09% of the patients instilled combination of both antibiotic and

steroid. Out of 110 patients 10% of the patients had Diabetes Mellitus which was significantly associated with suppurative. Out of 110 patients, 97 patients had positive smear stain while the rest were sterile. Out of 97 positive stained smears, 41.23% of the patients had gram positive organisms present which was significantly associated with suppurative keratitis. Out of 110 patients, 47 patients had bacterial culture positive. Out of which, 20 patients had S.aureus isolated, 9 patients had Streptococci, 11 patients had Pneumococci, 5 patients had Pseudomonas, 1 patient had E.coli and 1 patient had 1 Proteus isolated on culture examination. Out of 110 patients, 18 patients had fungal culture positive. Out of which 7 patients had Fusarium, 6 patients had A.flavus, 3 patients had A.fumigatus, 1 patient had A.niger and 1 patient had Curvularia isolated on culture examination. Out of 110 patients, 74 patients were diagnosed as bacterial corneal ulcer, 27 as fungal corneal ulcer and 9 as mixed infection on clinical examination. While out of 110 patients, 58 patients were diagnosed as bacterial infection, 22 patients as fungal infection, 17 patients as mixed infection and 13 patients as sterile (no infection) on microbiological examination These data were not statistically significant indicating that clinical characteristics and microbiological results could be co-related.

CONCLUSION

Diagnosis can reliably be made based on the careful evaluation of clinical features alone even before getting microbiological confirmation to start the appropriate initial treatment. This information will guide us while formulating recommendations for preferred practice patterns and preventive measures for Suppurative Keratitis in population at risk.

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