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A Study On Clinical And Microbiological Evaluation Of Corneal Ulcers In GGH, Kakinada During 2013-2015.

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Abstract

Purpose:

The aim of the study is to know various pathogens causing corneal ulcers and to find out the incidence of various types of pathogens causing corneal ulcers based on clinical and microbiological evaluation**.**

Methods :

The patient were admitted in the Government general hospital, Kakinada,
were included in this study during the period 2013-2015.
Most of the cases admitted are between age 11 – 80.
The scheme of work done in this study is the following.
History taking, examination of cases, Investigations and Treatment

Results:

Most of the corneal ulcers found in the age group between 41 – 60 yrs and incidence is more common in males 63%, females 37%.($p<0.001$). The incidence of corneal ulcer is more common in rural area is 74%. Most of the organisms isolated from corneal ulcer after lab investigations are fungi 54%.($p<0.001$)

Conclusion

The earlier the diagnosis is done based upon clinical and microbiological evaluation , it reduces chances of ocular morbidity and blindness due to corneal ulcers.

Introduction

Corneal ulcer is one of the most common cause of preventable blindness especially in developing countries like India. Corneal blindness accounts for 20-30% of all blindness in the world. As the corneal ulcer is the leading cause of this problem this study has been taken up to go into the details of etiology and incidence of various organisms causing corneal ulcers. The majority of the cases are reported from rural areas who dependent upon agriculture. Malnourished and poorer income rule our country, trauma to cornea accounts for 60-80% of cases. Trauma may breakdown normal defense mechanism and allow resident flora of conjunctiva to colonize damaged corneal tissue or pathogenic organisms are inoculated into eye at time of injury. It has been

one of the main ophthalmic problem as corneal ulceration can progress rapidly, threatening integrity of eye and producing significant tissue destruction With threat of vision loss and potential corneal perforation. Present study is undertaken to know the common organisms causing corneal ulcers, incidence of various types of organisms causing corneal ulcers based on clinical and microbiological evaluation. Clinical and microbiological evaluation of corneal ulcers is of great help for control of ocular morbidity and blindness.

Etiology and Predisposing Factors

Bacterial:

Causative bacterial corneal infections include :

Staphylococcus epidermidis, pseudomonas aeroginosa, staphylococcus aureus,

streptococcus pneumonia, bacillus sp, E-coli klebsiella pneumonia, N. Meningitidis,

N.gonorrhoea, C. diptheria.

Fungal :

Filamentous fungal : Aspergillus, fusarium, Alternariam Cephalosporin, Curvularia and

Pencilium,

Yeasts : Candida Cryptococcus.

Most common : Aspergillus, fusarium and candida

Viruses:

Cause corneal disease with significant ocular morbidity include herpes simplex (HSV),

Varicella zoster (VAV), Epstein Barr (EBV), adenovirus, cytomegalovirus (CMV).

Parasitic

Acanthamoeba sp, Microsporidosis, onchocarciasis, leishmaniasis and loaloa sp.

8 species of acanthemoeba are known to cause keratitis out of which the most common

being A.castellani.

Contact lens wearers are at particular risk, although the infection may be non –

contact lens related.

Materials and Methods

The patient were admitted in the GGH, Kakinada during 2013-2014 were

included in this study.

Most of the cases admitted are between age 11 – 80.

The scheme of work done in this study is the following.

History taking, examination of cases, Investigations and Treatment

a. **History taking** : Age, sex, occupation, economic status and nourishment were recorded. The mode of onset was recorded and factors like injury or FB damaging the cornea were recorded. Previous ocular disease predisposing to ulcer was recorded. Systemic diseases like diabetes, Hypertension and HIV enquired. Exposure to chemicals and UV light rays enquired.

b. **Examination of cases**: systemic and local examination was done and any associated eye condition which may have predisposed to hypopyon were noticed visual acuity to recorded in each case. The routine investigations like examination of urine and testing patency of lacrimal passage were done in all these cases.

c. **Investigations** : conjunctival smears were examined for gram stain and KOH preparation. Corneal scrapings of the base and margins after washing the conjunctival sac with xylocaine. Platinum loop with an aluminum holder is heated on a Bunsen flame and cooled. The edges and base of the ulcer is scraped with a loop smear for gram stain, giemsa stain and KOH

preparation is done. The scraping is inoculated into blood agar, chocolate agar, Mac conkey media, nutrient agar broth and sabourauds media. WBC and RBC count were done.

d. Till the culture and sensitivity of corneal scarping is awaited fortified antibiotics are given. After the culture and sensitivity reports has arrived change in antibiotic is done as per the culture report.

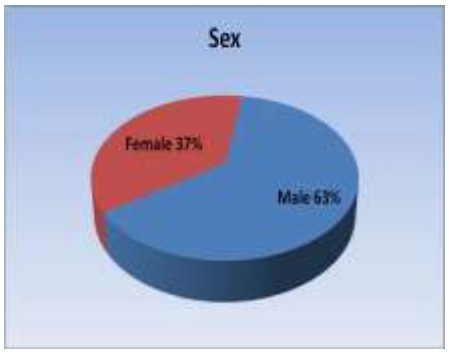
OBSERVATION AND DISCUSSION

A total of 100 corneal ulcer patients were included in the study.

Sex incidence:

Sex	Number of Cases	Percentage
Male	63	63%
Female	37	37%

Graph:1



The above analysis shows that the condition is more common in males than in females which are explained by the fact that they are exposed to greater risk of injury to the eye. But a good number of females also suffer from corneal ulcer because they come from poorer classes and they have to work outside in the fields to earn their livelihood.

Living condition:

Place	Number of Cases	Percentage
Rural	74	74%
Urban	26	26%

Graph:2

The rural population has a higher incidence of corneal ulcers due to frequent exposure to dust, dirt and foreign bodies. This incidence is highly attributed to lack of proper education regarding eye diseases and also due to false belief and customs in treating the eye problems like application of natural irritants.

Occupation :

Occupation	Number of Cases	Percentage
Agricultural labour	41	41%
Labour	30	30%
House wife	15	15%
Others	14	14%

Graph:3

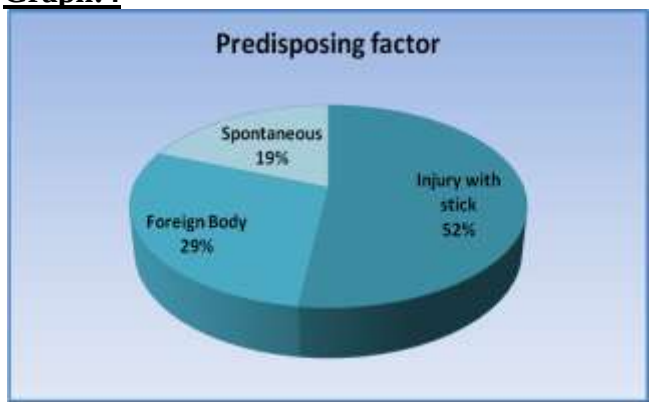
The above table shows that agriculture labourer and industrial workers are more prone to injury to the eye. Hence occupation is an important factor in the causation of corneal ulcer.

Predisposing cause :

Predisposing factor	Number of Cases	Percentage
Injury with stick	52	52%
Foreign Body	29	29%

Spontaneous	19	19%

Graph:4



The above analysis shows that trauma or FB in the eye account for most of the cases of the present series.

Age incidence :

Age	Number of Cases	Percentage
11-20	12	12%
21-30	11	11%
31-40	19	19%
41-50	28	28%
51-60	24	24%
61-70	4	4%
71-80	2	2%

Graph:5

The age group between 41-60 is more prone for corneal ulcers and this accounted for 52% of cases. This is because of the working group falls in this category.

Organism isolated :

Organism Isolated	Number of Cases	Percentage
Fungi	54	54%
Bacteria	19	19%
No Biological Growth	12	12%

Graph: 6

This study indicates that fungal corneal ulcers accounts for 54% of the cases. Sterile cultures are due to the fact that the patient come to the department after using antibiotics.

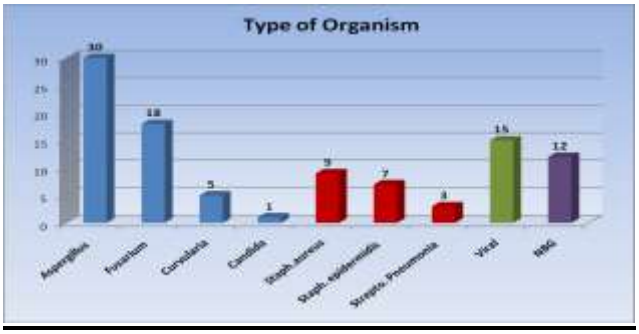
Showing Various Pathogenic Organisms Isolated In 100 Cases Of Clinically And Microbiologically Diagnosed Corneal Ulcers

Type of Organism	Number of Cases	Percentage
Aspergillus	30	30%
Fusarium	18	18%
Curvularia	5	5%
Candida	1	1%
Staph.aureus	9	9%
Staph. epidermidis	7	7%
Strepto. Pneumonia	3	3%
Viral	15	15%
NBG	12	12%

The above table shows fungi are the most common causative agents in corneal ulcers. More than 50% of cases are attributed to fungi in my study. Staphylococcus is usually present in healthy conjunctival sac. It is a commonest organism to cause an ulcer in compromised, malnourished and patient on steroids. We

diagnose viral keratitis based on patient history and clinical findings i.e., S/L examination and clinical features.

Graph:7



The majority of fungal ulcers are due to direct injury to the eye with vegetable matter. Among the fungal aspergillus fumigatus is the most common.

Conclusion :

We have conducted a study of 100 cases of corneal ulcers over a period of two years in the GGH, Kakinada.

- Most of the corneal ulcers found in the age group between 41 – 60 yrs and incidence is more common in males 63%, females 37%.($p<0.001$).
- The incidence of corneal ulcer is more common in rural area –74%.
- Commonest predisposing factors observed is trauma or Foreign Body.
- Most of the corneal ulcers seen in agricultural labour –41% than the other occupation.
- Most of the fungal organisms are isolated from corneal ulcers seen in agricultural labour.
- Most of the organisms isolated from corneal ulcer after lab investigations are fungi 54%.($p<0.001$).
- Among the fungi most commonly seen organisms are aspergillus species 30% and fusarium18%.($p<0.001$).
- Bacteria isolated from corneal ulcers - 19%
- Among the bacteria most commonly seen organisms are staphylococcus aureus, staphylococcus epidermidis, streptococcus pneumonia.
- Viral corneal ulcers are best diagnosed depending upon history and clinical picture 15%.

Our conclusion is the earlier the diagnosis is done based upon clinical and microbiological evaluation, it reduces chances of ocular morbidity and blindness due to corneal ulcers.

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