

CLINICAL EVALUATION OF NON HEALING BACTERIAL CORNEAL ULCER: IN PRESENT SCENARIOBahubali Jain¹, M. Shrivastawa²**HOW TO CITE THIS ARTICLE:**

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ABSTRACT: During the study 50 eyes with NHBCU referred from various hospitals & from periphery to our OPD during academic session 2005-06 were taken to find out various factors responsible for non healing bacterial corneal ulcer. Various factors which were responsible for non healing were uncorrected lid abnormalities, chronic dacryocystitis, ocular surface disorder, uncontrolled glaucoma, and systemic factors like DM, Hypovitaminosis A & immunocompromised state, incorrect diagnosis and incorrect treatment. All these patients were managed accordingly and meticulously. This paper will discuss above finding in details.

KEYWORDS: NHBCU.

INTRODUCTION: Corneal ulcer, or ulcerative keratitis, is an inflammatory or more seriously, infective condition of the cornea involving disruption of its epithelial layer with involvement of the corneal stroma.¹ It is a common condition in humans particularly in the tropics and the agrarian societies. In developing countries, children afflicted by Vitamin A deficiency are at high risk for corneal ulcer and may become blind in both eyes, which may persist lifelong. In ophthalmology, a corneal ulcer usually refers to having an infectious etiology while the term corneal abrasion refers more to physical abrasions.²

Bacterial keratitis is leading cause of monocular blindness in the developing world. When it is superimposed with various factors which mitigate against healing of disease, then we face that menace non-healing bacterial corneal ulcer.

Course of bacterial keratitis-normally heals in 1-2 wks if delayed more than 3 wks than it is NHBCU.³

Corneal healing: An ulcer of the cornea heals by two methods: migration of surrounding epithelial cells followed by mitosis (dividing) of the cells, and introduction of blood vessels from the conjunctiva.⁴ Superficial small ulcers heal rapidly by the first method. However, larger or deeper ulcers often require the presence of blood vessels to supply inflammatory cells.⁵ White blood cells and fibroblasts produce granulation tissue and then scar tissue, effectively healing the cornea.

Diagnosis is done by direct observation under magnified view of slit lamp revealing the ulcer on the cornea. The use of fluorescein stain, which is taken up by exposed corneal stroma and appears green, helps in defining the margins of the corneal ulcer, and can reveal additional details of the surrounding epithelium.⁶⁻⁸ Herpes simplex ulcers show a typical dendritic pattern of staining. Rose-Bengal dye is also used for supra-vital staining purposes, but it may be very irritating to the eyes. In descemetocoeles, the Descemet's membrane will bulge forward and after staining will appear as a dark circle with a green boundary, because it does not absorb the stain.⁹ Doing a corneal scraping and examining under the microscope with stains like Gram's and KOH preparation may reveal the

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bacteria and fungi respectively. Microbiological culture tests may be necessary to isolate the causative organisms for some cases.¹⁰

Proper diagnosis is essential for optimal treatment. Bacterial corneal ulcer requires intensive fortified antibiotic therapy to treat the infection. Alongside, supportive therapy like pain medications are given, including topical cycloplegics like atropine or homatropine to dilate the pupil and thereby stop spasms of the ciliary muscle. Superficial ulcers may heal in less than a week. Deep ulcers and descemetocoeles may require conjunctival grafts or conjunctival flaps, soft contact lenses, or corneal transplant.¹¹

Proper nutrition, including protein intake and Vitamin C are usually advised. In cases of Keratomalacia, where the corneal ulceration is due to a deficiency of Vitamin A, supplementation of the Vitamin A by oral or intramuscular route is given. Drugs that are usually contraindicated in corneal ulcer are topical corticosteroids and anesthetics - these should not be used on any type of corneal ulcer because they prevent healing, may lead to super infection with fungi and other bacteria and will often make the condition much worse.

Noncompliance leads to failure. The most common reason for unsuccessful treatment of bacterial ulcers is noncompliance, "If the ulcer is very serious or there was a delay in accurate diagnosis and treatment, or if a patient has no support system to help with compliance, consider admitting the patient to the hospital overnight."

Steroids: Use with care. Although using strong antibiotics will sterilize the ulcer, it won't control the inflammatory reaction, which can be just as damaging to the cornea as the infection itself, according to Dr. Afshari. As soon as there is evidence that the antibiotic is working (e.g., the epithelial defect is starting to close, or the culture shows sensitivity to antibiotics), using corticosteroids will inhibit the inflammatory response and reduce corneal scarring.

When to question the diagnosis. "Day 1, you do a culture and start a fluoroquinolone. Day 2, you expect the patient to feel at least no worse and, hopefully, a little better. Days 2, 3, and 4, the ulcer should start consolidating and the appearance of the eye should be noticeably improved,"

AIM OF STUDY: To find out various factors responsible for non-healing of bacterial corneal ulcer.

MATERIAL AND METHODS: During the study 50 eyes with NHBCU referred from various hospitals & from periphery were taken to find out various factors responsible for non-healing bacterial corneal ulcer.

	NO.	%
Male	26	52
Female	24	48
Urban	15	30
Rural	35	70
Age < 50 yrs	20	40
Age >50 yrs	30	60

DEMOGRAPHIC PROFILE

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	NO.	%
Agriculture worker	20	40
Labor	6	12
Trademen & Professional	6	12
Student & Children	6	12
House Hold	8	16
Unemployed	4	08
Occupation		

Evaluation of patients: Diagnosis of bacterial keratitis was made on the basis of clinical picture & corneal scraping and smear for gram stain & KOH. Routine ocular investigation like slit lamp biomicroscopic examination and syringing were performed followed by routine medical investigation like blood sugar.

RESULT: Following compromising factors were deduced which were responsible for non-healing of bacterial corneal ulcer:

- A- Co-existing ocular diseases-48%
 - 1-Uncorrected lid abnormalities-8%
 - 2-Ocular surface disorder-24%
 - 3-Chronic Dacryocystitis-12%
 - 4-Untreated Glaucoma-4%
- B-Systemic Factors-Diabetes mellitus, Vitamin A deficiency, immunocompromised state:-16%
- C-Inappropriate diagnosis-(viral, fungal, autoimmune etc).-16%
- D-Incorrect treatment-(steroid)-16%
- E-Drug toxicity-6%

CONCLUSION: Various factors were responsible for non-healing of corneal ulcer out of which coexisting ocular diseases were responsible for non-healing in 24 cases. Steroid drops used in periphery were responsible in 8 cases. Uncontrolled diabetes was reason for non-healing in 8 cases. Incorrect diagnosis followed by incorrect treatment lead to non-healing in 8 cases.so finding out the cause of non-healing and aggressively managing the case help in saving eye.

Management of NHBCU requires meticulous assessment at various level and flexible rational approach to modify treatment modality to alter its course so they can heal with minimal damage to cornea.

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