

## A Rare Case of Fungal Keratitis with Herpes Infection-“A Race between a Fungus and a Virus”

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### Abstract

Corneal infection caused by more than 1 microorganism is relatively uncommon. It may occur as a co infection or as a secondary infection superimposed to an existent microorganism.<sup>1</sup>Microbial keratitis is a potentially vision threatening condition that requires prompt diagnosis and treatment to prevent untoward outcomes. The prevalence of MK has been found to vary according to type, geographical location, and causative factors. An estimate of 1.5 to 2 million cases of corneal ulcers occur annually in the developing countries.<sup>2</sup>Herein we report a 32 young man complained of redness in the left eye for 10 days; accompanied with eye pain, photophobia, and blurred vision for 7 days and exacerbated in the next 2 days. After the patient was admitted, corneal smear was performed, and the scrapings were sent for bacterial, fungal, and Acanthamoeba cultures and tested for antibiotic sensitivity. Fungal hyphae and epithelium were found in corneal smear. Patient was diagnosed with Fungal keratitis and treatment started. On follow up, patient developed multiple lesions with rash in the periorbital region, Tzanck smear was done and patient was diagnosed to have Herpes simplex virus. Immediate treatment using antifungal with antiviral medicines started, following which patient recovered well.

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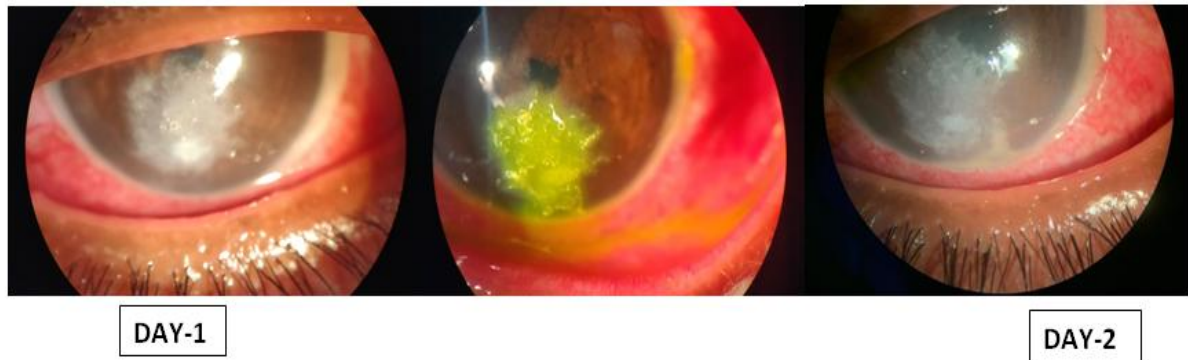
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### I. Introduction

Corneal ulcer is a common infectious disease of the cornea, resulting in significant vision loss. It is caused by various organisms, such as bacteria, fungi, virus, or protozoa. The severity of corneal infections usually depends on the underlying condition of the cornea and the virulence of the infecting microbes. The prognosis is poor if an appropriate and aggressive therapy is not initiated immediately.<sup>3</sup>It is extremely rare that fungi and virus affected cornea at the same time. A breach in these anatomical barriers, mainly from ocular injuries and epithelial defects, reduces the effectiveness of host defenses against pathogens, resulting in ocular infection, inflammation, and eventual visual loss. The most common predisposing factors include trauma, systemic diseases such as diabetes mellitus and/or extended use of topical corticosteroids, the use of contact lenses (overnight or extended wearing of lenses), ocular surgery (corneal surgery), inadequate disinfecting solutions, and chronic ocular surface disease.<sup>4,5</sup>

### II. Case Report

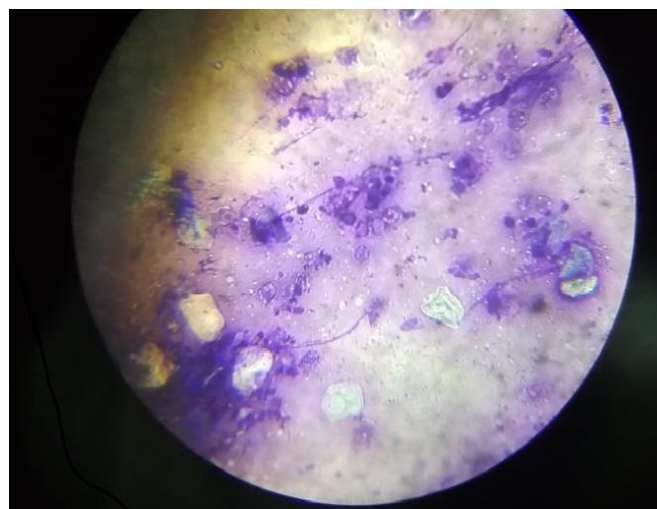
A 32 year old young man presented with the complaints of redness in the left eye for 10 days; accompanied with eye pain, photophobia, and blurred vision for 7 days and exacerbated in the next 2 days. Inability to open the left eye in the sunlight since 8 days. Pain was dull in nature, present throughout the day. No history of similar episodes in the past. No history of contact lens usage. No history of chronic use of ocular medications. No history of previous ocular surgeries. No history of systemic disease/connective tissue disorder/Diabetes/Hypertension. No history of smoking or alcoholism. On examination, visual acuity of his right eye was 6/6, while the visual acuity of the left eye was counting finger in front of the eye with no improvement on pinhole. The clinical manifestations are shown in the fig.1 below



**FIGURE:1(a)**4\*5MM CORNEAL ULCER OF GREY COLOUR IN PARA CENTRAL ZONE WITH FEATHERY MARGINS IRREGULAR IN SHAPE AND DRY BASE, GREY INFILTRATE INFERIORLY OF 3MM,SATLLITE LESIONS WITH STROMAL EDEMA PRESENT.  
**(B)**FLUORESCENT TAKING UP OF THE ULCER  
**(C)** DAY-2 PATIENT DEVELOPED HYPOPYON OF 1MM WITH PROGRESSION OF THE ULCER, POST DEBRIDEMENT IMAGE.



**FIGURE:2(a)** CONJUNCTIVAL CONGESTION AND CORNEAL EDEMA WAS ALLEVIATED.  
**(b)&(c)** MULTIPLE REDDISH PERI ORBITAL LEISONS WELL CIRCUMSCRIBED,FLUID FILLED VESICOPAPULAR IN NATURE WITH RASH DEVELOPED SUGGESTIVE OF HSV.



**Figure 3:**MULTIPLE GIANT CELLS ALSO KNOWN AS TZANK CELLS (FACETED NUCLEI AND GROUND GLASS CHROMATIN) CONFIRMED HSV

After the patient was admitted, corneal smear was performed, and the scrapings were sent for bacterial , fungal, and Acanthamoeba cultures and tested for antibiotic sensitivity. Fungal hyphae and epithelium were found in corneal smear. Patient was diagnosed with Fungal keratitis and treatment started. On follow up, patient

developed multiple lesions with rash in the periorbital region, Tzanck smear was done and patient was diagnosed to have Herpes simplex virus. Polymerase chain reaction is a sensitive method to detect viruses. Unfortunately, we could not get viral sample laboratory test. Considering the medical history and treatment was effective on the 1st week after onset, we continued with Ant viral and Antifungal.

### III. Discussion

The fungus is a kind of conditional pathogenic microorganism. In a normal conjunctival sac, the positive rate of fungal culture ranges from 2.9% to 27.4%.<sup>6</sup> Making a diagnosis of mixed microbial corneal infection is more challenging than infection caused by 1 microorganism. In some cases of simultaneous infections, one microorganism may be initially detected, and specific treatment of this microorganism may not result in healing unless the other organism is detected and treated. However, when treatment against the initial microorganism fails, suspicion of a co infection should be raised, and repeated smears and cultures and, if necessary, corneal biopsies should be considered. Keratitis is believed to occur after trauma because of S. epidermidis or filamentous fungi; traumatizing agents either directly implant fungal conidia and bacteria in the corneal stroma or abrade the epithelium, thus permitting invasion by exogenous fungi or normal colonizing bacteria. Fungal keratitis is the combination of result pathogen and host factors, such as long-term use of antibiotics, bacterial flora in the conjunctival sac, or use of corticosteroids, leading to local hypo immunity. In general, patients exhibit ocular trauma history, particularly from contact with plants or wood. In our patient initial diagnosis made was fungal keratitis, the diagnosis was based on empiric with the clinical manifestation and later diagnosed with HSV infection. It is extremely rare that fungi and virus affected cornea at the same time.

### IV. Conclusion

Ophthalmologists should be aware of the uncommon manifestations and complications of keratitis and vary treatment depending on a patient's condition. The studies suggested that when the course of the infectious keratitis is atypical or unresponsive to usual medical treatment, the possibility of mixed infections by microorganisms should be considered. To our knowledge, a case like this is a rarity in itself so we wanted to put forth this case and highlight the case to broaden the knowledge.

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