

## Complicated corneal ulcer. Case report

Nicula Cristina\* \*\*, Szabo Izabela\*

\*Ophthalmology Clinic, County Emergency Hospital Cluj-Napoca, Romania

\*\*"Iuliu Hatieganu" University of Medicine and Pharmacy, Cluj-Napoca, Romania

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**Correspondence to:** Cristina Nicula, MD,  
Ophthalmology Clinic, County Emergency Hospital Cluj-Napoca, Romania,  
3-5 Clinicilor Street, Code 400006, Cluj-Napoca, Romania,  
Mobile phone: +40722 849 575, E-mail: niculacristina65@yahoo.com

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### Abstract

Corneal ulcers are considered an ophthalmologic emergency because of their potential to permanently impair vision or perforate the eye. The therapeutic management includes medical therapy and in case of failure, surgical care such as amniotic membrane transplantation.

We present the case of a 76-year-old male, admitted for sudden visual loss in the left eye, associated with ocular pain, tearing, and photophobia. The patient was diagnosed with superficial ulcerative keratitis with hypopyon and acute exogenous anterior uveitis for which he underwent medical treatment, both general and topic, with a good evolution during a month. After a month, the patient presented with the corneal ulcer perforated. Surgery was performed in the left eye by covering the ocular surface with an amniotic membrane using the Motowa's sandwich technique. After one year, the same patient was successfully operated for cataract removal and posterior chamber intraocular lens implantation in the left eye.

**Keywords:** corneal ulcer, ulcerative keratitis, amniotic membrane

### Introduction

Corneal ulcer or ulcerative keratitis is an inflammatory or infective condition of the cornea involving disruption of its epithelial layer with involvement of the corneal stroma. Management of corneal ulcers is still a challenge for the ophthalmologist because of its known and unknown etiology [1]. Although corneal ulcers may occasionally be sterile, most are infectious in etiology. Due to viral infection, ulcers occur on a previously intact corneal epithelium. Bacterial corneal ulcers generally follow a traumatic break in the corneal epithelium, thereby providing an entry for bacteria. The traumatic episode may be minor, such as a minute abrasion from a small

foreign body, or may result from such causes as tear insufficiency, malnutrition, or contact lens use [2]. Males are predominantly affected. In cases of bacterial corneal ulcers, agricultural related work was identified as a risky occupation [1]. Both medical and surgical treatment are available in these cases. Medical therapy consists in antibiotics (general or topical), mydriatics, and steroids [3]. In case of medical treatment failure, resulting in ulcer perforation, surgical care, such as amniotic membrane transplantation, is required.

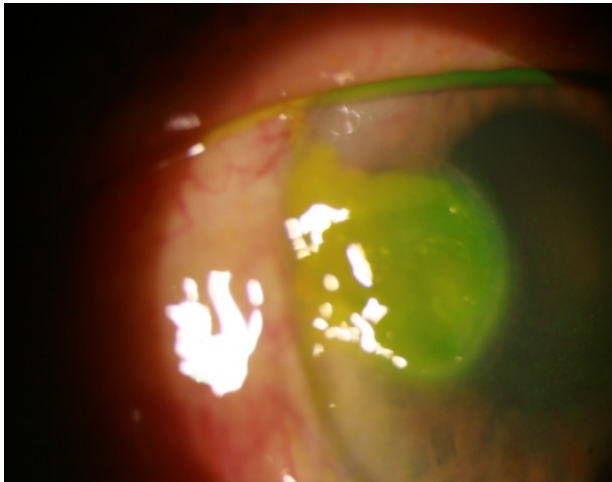
The amniotic membrane is used both in infectious and sterile ulcers with thinning and perforation. In case of significant tissue loss, it may be applied in layers to build thickness to the defect [4]. Its main indications are corneal

ulceration, covering defects in large conjunctival lesions and acute chemical burns to the surface of the eye [5].

## Case report

The paper presented the case of a 76-year-old male, admitted in emergency for sudden visual loss, ocular pain, tearing, and photophobia in the left eye (LE). The patient denied having suffered for any type of ocular traumatism and his main occupation was an agricultural related work.

The ophthalmological exam at admission revealed a visual acuity of 20/ 630 wc in the LE. The slit lamp examination showed a swollen upper eyelid, hyperemic conjunctiva, corneal ulcer with infiltrated margins, of about 3 mm in diameter, which was stained with fluorescein and endothelial edema. The anterior chamber (AC) was present, with Tyndall ++, 1 mm hypopyon, a posterior synechia at 5 o'clock and a miotic, areflexic pupil (**Fig. 1**).



**Fig. 1** Slit lamp examination LE - fluorescein stain

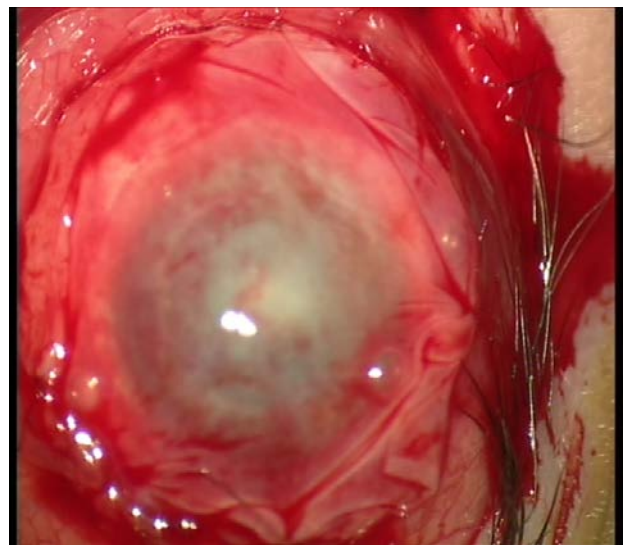
No details could be seen in the fundus examination of the LE due to the endothelial edema.

Laboratory work up revealed a raised erythrocyte sedimentation rate (ESR), normal immunological markers and a normal urine specimen. No obstruction on the tear ducts was found and corneal sensibility was present. The results of the microbiological culture from the

corneal ulcer were not relevant because the patient was already under antibiotic therapy.

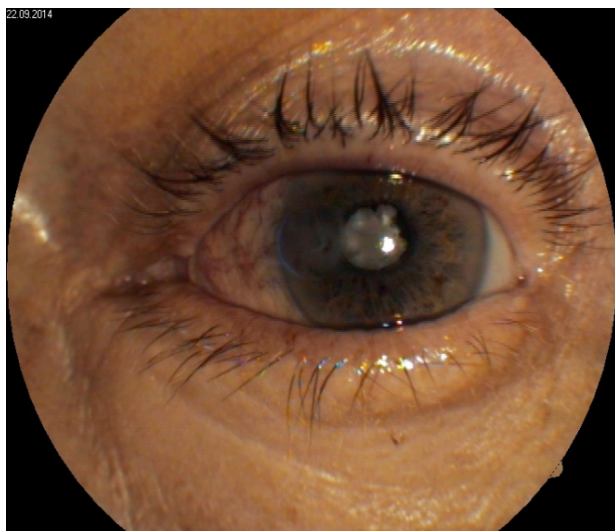
Based on the symptoms and the biomicroscopic aspect of the LE, the patient was diagnosed with ulcerative superficial keratitis with hypopyon, probably with bacterial etiology and acute toxic exogenous anterior uveitis. An immediate general therapy was started with Ceftriaxone 2 g/ day intramuscular, Diclofenac 3 tablets/ day and Omeprazole a tablet/ day. Also a topical therapy was initiated in the LE with Moxifloxacin 3 drops/ day, mydriatics 5 drops/ day (Tropicamide and Phenylephrine), Indocollire 3 drops/ day, peribulbar injections with Gentamicin 20 mg + Dexamethasone 1/ 2 f/ day and Corneregel 2 applications/ day. The evolution under treatment was good. The patient was discharged with a visual acuity of 20/ 400 wc and a much improved biomicroscopic aspect of the LE.

A month later, the patient returned to the emergency department of our clinic with a visual acuity of 20/ 630 wc, diffuse conjunctival hyperemia, a perforated corneal ulcer with the iris inlaved in the perforation, the pupil pulled temporally and unequal anterior chamber depth. General and topical therapy was initiated and a day later, the ocular surface of the LE was surgically covered with a lyophilized amniotic membrane graft using the Motowa's sandwich technique, without intraoperative complications and with a favorable postoperative evolution with a therapeutic contact lens on the operated eye (**Fig. 2**).



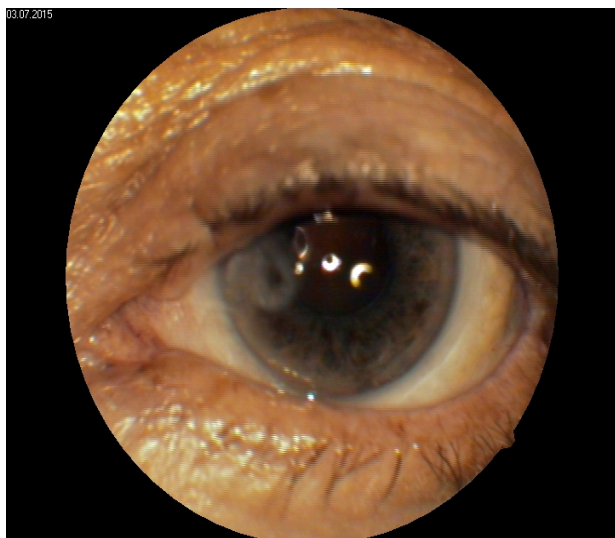
**Fig. 2** Amniotic membrane covering the ocular surface

Four weeks after the surgery, at a routine check-up, the aspect of the anterior segment in the LE was the one showed in **Fig. 3** - the corneal ulcer was healed, anterior chamber restored, a few posterior synechia remained, but the lens was completely opacified.



**Fig. 3** LE - mature age related cataract

The phacoemulsification procedure with the implantation of a posterior chamber intraocular lens (PC-IOL) was performed a year later without intraoperative complications and with a favorable postoperative evolution (**Fig. 4**).



**Fig. 4** LE - after cataract surgery and PC-IOL implantation

## Discussions

Even if we first dealt with a corneal ulcer, despite the medical therapy consisting in a combination of fortified antibiotics and corticosteroids, it was complicated to perforation. Bacterial corneal ulcers of 2-8 mm size have a poor healing tendency under medical treatment. There is no difference in the efficacy of monotherapy with fourth-generation fluoroquinolones in the treatment of bacterial corneal ulcers when compared with combination therapy of fortified antibiotics [6].

We believe that the lack of compliance to the medical treatment and hygienic recommendations, while being at home, were an additional reason for the corneal ulcer perforation after a period of a month of favorable evolution.

Corneal perforation may be associated with the prolapse of ocular tissue and requires prompt diagnosis and treatment. Medical therapy is a useful adjunct but surgical approach is required for most cases of corneal perforations [7].

After the amniotic membrane transplantation, the favorable evolution in our case was due to the unique combination of properties that the membrane had, including the facilitation of migration of the epithelial cells, the reinforcement of basal cellular adhesion, the ability to modulate stromal scarring and its anti-inflammatory and anti-bacterial activity [8].

The main complain of our patient after the amniotic membrane transplant was the low visual acuity due to complicated cataract. Taking into consideration the possible intraoperative complications that could occur during cataract surgery, it was decided to postpone the moment of the surgery for at least a year. During all this time, the cornea had a favorable evolution.

Despite the difficult intraoperative visibility due to the corneal leucoma and poor dilatation, the cataract surgery was a success with no intraoperative and postoperative complications.

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