A CASE REPORT: THE STRATEGY OF CORNEAL ULCERS

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ABSTRACT

Introduction: *Corneal ulcers are considered an ophthalmologic emergency because of their potential to permanently impair vision or perforate the eye. Accurate and quick diagnosis and prompt treatment is a key to improve clinical and visual outcomes in cases of corneal ulceration. In case of medical treatment failure, resulting in ulcer perforation, surgical care is required. Here we make an attempt to provide an overview on diagnostic approach and management protocol of corneal ulcer.*

Case Presentation: *In this paper, we present the case of male 40-year-old presented with complaints of pain and defective vision in the right eye. Visual examination of the right eye is 1/~. It was found, palpebral edema, hyperemic tarsal conjunctiva. The bulbar conjunctiva showed conjunctival injection, ciliary injection. The cornea looks completely cloudy, the surface is not slippery, infiltrates and edema. The patient was treated with medical and surgical therapy, and then the patient's have a good clinical response and was able to return to work.*

Conclusion: *Indonesian farmers have highrisk of fungal corneal ulcers. Fungal corneal ulcers is important cause of corneal blindness all over the world especially in developing countries. Fungal corneal ulcers can diagnosis by slitlamp biomicroscopic examination and culture are essential for early specific diagnosis and must be taken consideratiaon to establish the most effective treatment and avoid severe complications.*

Keywords: *Fungal Corneal Ulcers, Blindness, Optimal Treatment of Corneal Ulcers, Tissue Discontinuity*

INTRODUCTION

Corneal ulcer is a pathological state characterized by infiltrates in cornea with corneal epithelial defect that result in a hollow. World Health Organization (WHO) states corneal muddiness, including corneal ulcer as the 4th leading cause of blindness in the world.[1]

This condition causes pain, reduces the clarity of vision and the possibility of corneal erosion. Partial loss of the corneal surface is mainly caused by infection with microorganisms such as bacteria, fungi, and viruses and if diagnosed late or not given proper initial therapy will result in stromal damage and cause further complications such as descemetocele, perforation, and endophthalmitis. In developing countries, 1.5-2 million cases of corneal ulcers occur annually, causing *corneal opacity.*[2]

Corneal trauma was the most common cause (68.4%) of corneal ulcers. Eye trauma often occurs due to foreign objects, one of which is material derived from plants, therefore corneal ulcers are often experienced by people who work in the agricultural sector, considering the use of personal protective equipment at work has not been optimally implemented in Indonesia. Most of these visual disturbances are preventable, but only if the cause is diagnosed early and treated adequately. The diagnosis of corneal ulcers can be established by good clinical examination assisted by a *slit lamp*, while the cause is established by microscopic examination and culture.[3]

The goals of the management of corneal ulcers are eradicating bacteria from the cornea, suppressing the inflammatory reaction so can not aggravate the destruction of the cornea, accelerating the healing of epithelial defects, overcoming complications, and improving visual acuity. This can be done by giving appropriate and fast therapy according to the culture and the results of the sensitivity test of the causative microorganism. In addition to medical therapy, another action that can be taken is surgery. Prognosis of corneal ulcers depends on the severity and speed of getting help, the type of microorganism causing it, and the presence or absence of complications.[4,5]

CASE REPORT

A farmer, male 40-year-old presented with complaints of pain and defective vision in the right eye for three weeks. He gave history of foreign body in the cornea that cause by palm leaf. Patient complaints that his right eye was scratched by palm leaves while working, the patient admitted that he did not use protective glasses. Initially, the patient only feel itchy and had pain in the right eye, so the patient only cleaned the right eye using a running water. The patient admitted that he likes to rub his eyes because of itching. This makes the patient go to the midwife and get eye drops. ± 3 days before admitted to hospital, the patient feels that his complaints are getting heavier, the pain is felt continuously and the day the pain gets worse and is accompanied by headaches and blurred vision, dazzled, the patient admits difficult to open his eyelids, requent discharge of water and mucus in the eyes and red eyes (+) . This made the patient come to the Emergency unit at Raden Mattaher General Hospital, Jambi.

Physical examination, primary survey and hemodynamic status were stable. From a neurological examination, GCS 456 was obtained, blood pressure of 120/80 mmHg, heart rate 88x menit, repiratory rate 18 beats per minute, temperature 37°C. On examination in right eye, the visual acuity was 1/~ , there are edema and blepharospasm of the eyelids **(Figure 1 and 2).**

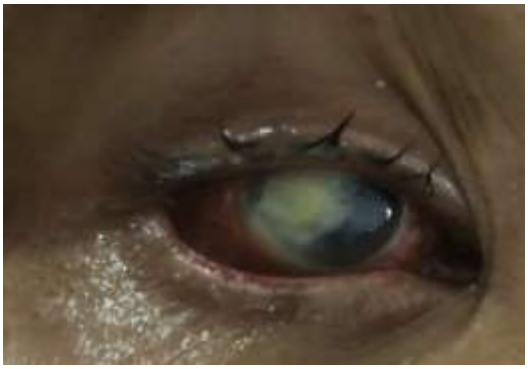

Figure 1. Clinical Appearance of the Right Eye

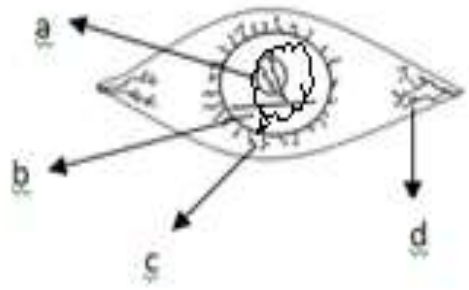

Figure 2. Right Eye. a. Tissue Discontinuity b. Hypopion c. Ciliary Injection d. Conjunctival Injection

Slit lamp evaluation of the right eye revealed a full thickness corneal ulcer, tissue discontinuity, corneal infiltrate, ciliary injection, conjunctival injection. The margins of the ulcer were irregular. Hypopyon filled the anterior chamber and ocular tension was high. Using standard techniques, corneal scrapings, were inoculated directly onto Sabouraud's media. The fungus was identified as Candida. The species was confirmed as albicans. The fungus isolated was C. albicans based on clinical impression, the patient was started on medical therapy and surgical therapy, and then the patient's have a good clinical response

DISCUSSION

Symptoms experienced by patients can lead to a diagnosis of corneal ulcers because of the triad of corneal ulcers, namely excessive tears (epiphora), an upper eyelid that cannot open (blepharospasm), and pain that increases when looking at light (photophobia).[6]

This is in accordance with the literature which says that corneal ulcers cause pain because the cornea has many nerve fibers, so most corneal lesions will cause pain, this pain is exacerbated by the friction of the eyelids. Sensitivity to light (*photophobia*) due to iris contraction due to inflammation in which the iris vessels dilate which is a reflex as a result of irritation of the corneal nerve endings. And increased tear formation. Another symptom is visual disturbances, in this patient visual disturbances due to the location of the ulcer, namely the entire cornea which interferes with the refraction of light entering the eye so that light cannot be focused precisely on the macula lutea. In addition, the presence of red and watery eyes due to an inflammatory process that causes dilation of blood vessels.[7]

On local examination of the right eye, blepharospasm was found because the patient was dazzled. Edema of the lids is caused by increased vascular permeability. Dilation of blood vessels due to an inflammatory reaction that extends to the posterior conjunctival arteries and anterior ciliary arteries. Corneal opacities are caused by edema of the cornea. This edema is caused by inflammation of the cornea which causes disruption of the Na-K pump resulting in water retention which can cause edema. It is also caused by the infiltration of inflammatory cells in the cornea.

In these patients, the history and physical examination need to be distinguished from corneal ulcers caused by fungi and bacteria. In corneal ulcers caused by fungi, eyelid edema and redness are minimal. On physical examination this patient also leads to a fungal corneal ulcer.

Corneal ulcers usually occur after minor trauma to the corneal epithelium. In this case, the history of work as a farmer and in working the patient did not use personal protective equipment, especially in his eyes so that this was a risk factor for trauma. The corneal epithelium is an efficient barrier against the entry of microorganisms into the cornea. However, once the cornea is injured, the avascular stroma and Bowman's membrane are susceptible to infection by various organisms such as bacteria, amoeba, fungi and viruses.[8]

On physical examination, the general condition appeared to be painful. Visual examination of the right eye is 1/~, meaning that the patient can only see light. In addition, it was found, palpebral edema, hyperemic tarsal conjunctiva. The bulbar conjunctiva showed conjunctival injection, ciliary injection. The cornea looks completely cloudy, the surface is not slippery, infiltrates, edema, there is a well-defined border ulcer, white, ± 5 mm in diameter.

Because the cornea is avascular, the defense against inflammation is not immediate, as in other highly vascularized tissues. Thus, the corneal body, *wandering cells* and other cells present in the corneal stroma immediately act as macrophages, followed by dilatation of the blood vessels in the limbus and appears as pericorneal injection.

On an active ulcer with *slit lamp* will show a number of cells or flares and debris in the precorneal layer, loss of corneal epithelium in the ulcer area, stoma edema, *Descement*, descemetocele and perforation. Also found dilatation of the vessels of the iris which is a reflex phenomenon caused by irritation of the nerve endings of the cornea. Impaired iris vascularization causes uveal tissue reactions in the form of hypopyon, hyphema, and posterior synechiae. The slit lamp examination can determine the severity of the corneal ulcer.[9]

The diagnosis of corneal ulcers was established based on history, physical examination and clinical examination using a *slit lamp* and laboratory examinations. Patient's examination revealed the presence of Candida albicans. This examination is important to distinguish the cause of the corneal ulcer so that it can help select an adequate therapy.[10]

Management given to patients were medical therapy and surgical therapy. Medical therapy was given by giving analgesics in the form of IV Ketorolac drip. Ketorolac was an NSAID class that works as an anti-inflammatory. This patient was also given antifungals in the form of fluconazole infusion 2x200mg and natamycyn 5% eye drops, systemic antibiotics with ceftriaxone 2x1gr and vigamox 0.5% eye drops, timolol 0.5% was given to reduce intraocular pressure, given mydriatic in the form of atropine sulfate drops. Atropine sulfate 1% was intended to suppress inflammation and to release and prevent anterior synechiae, because atropine sulfate had cycloplegic effect that caused pupillary mydriasis, thereby preventing the adhesion of the iris to the cornea. The education given to the patient is to maintain hygiene and avoid rubbing the eyes with the hands or fingers because it can aggravate the lesions.[11,12]

The prognosis in this case was poor because the cornea as one of the refractive media has experienced a defect and it takes time for re-epithelialization. Prognosis of corneal ulcers depends on the severity and speed of getting help, the type of microorganism causing it, and the presence or absence of complications. Extensive corneal ulcers require a long healing time, because the corneal tissue is avascular.[13]

CONCLUSION

Indonesian farmers have highrisk of fungal corneal ulcers. It was reported in farmers patiens with corneal ulcer that caused by palm leaf corneal corpus allienum. This topic is important because of the potentially severe ocular complications that can arise from corneal ulcers. Fungal corneal ulcers is important cause of corneal blindness all over the world especially in developing countries. Fungal corneal ulcers can diagnosis by slitlamp biomicroscopic examination and culture are essential for early specific diagnosis and must be taken consideratiaon to establish the most effective treatment and avoid severe complications.

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