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Case Report

Management of a Conjunctival Palpebral Foreign Body in the Emergency Room: A Case Report of a Rice Stalk Splinter

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ABSTRACT

A foreign body, especially an organic type, causes eye injuries due to the infectious reactions it may provoke. Therefore, it is crucial to promptly identify and locate the foreign body to facilitate its removal and prevent undesirable complications. This case report highlights the importance of establishing a diagnosis and providing appropriate management for a case of conjunctival foreign body in the palpebral area. This case involved a 50-year-old male patient presenting with complaints of discomfort and pain in the left eye, particularly when closing the eye. The patient reported a history of being struck in the left eye by a rice stalk two days ago. The visual acuity of the right and left eyes was recorded as 6/6, with intraocular pressure of 18 mmHg using a Schiotz tonometer. A fragment of rice stalk was found embedded in the inferior palpebral conjunctiva. In the eyelid eversion examination, there was no foreign body. The foreign body was only visible when the patient gazed to the left while we pulled down the lower eyelid. In conclusion, in this case, foreign body extraction was performed, followed by topical antibiotic therapy and analgesia. The patient was advised to return for a follow-up in one month.

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INTRODUCTION

A conjunctival foreign body occurs when an object with insufficient momentum to penetrate the conjunctiva entirely becomes lodged there. Patients often present with a recent history of metal grinding or striking activities. The organic foreign body and stone seem to be associated with a higher risk of infection than metallic particles. Symptoms closely resemble corneal abrasion, including foreign body sensation, photophobia, and excessive tearing. Larger foreign bodies may be visible upon diffuse light examination, whereas smaller ones are typically identified through slit-lamp examination (Salmon, 2020).

The global incidence of intraocular foreign bodies increased from 35.79 million cases in 1990 to 46.63 million in 2019, representing a 30.29% increase. Among the regions, Oceania had the lowest incidence rates in both 1990 and 2019, while South Asia recorded the highest number of cases in 2019. In Indonesia, the number of all ocular traumas in the eyes is 0.5% of the total population, with the highest prevalence in Bangka Belitung at 1.6%. The common ocular foreign body in the conjunctival among farmers was straw for 40.5% of cases, followed by fruits and vegetables were 24.3% (Kementerian Kesehatan, 2018; Khalid et al., 2024; Zhan et al., 2024)

Historical findings consider the material of a foreign body, consisting of, e.g., dirt, glass, metal, or organic. The mechanism of impact (hitting metal on metal is likely to cause a penetrating injury, whereas grinding or welding rarely do so). The common symptoms are foreign body sensation, watering, redness, photophobia, and blurred vision. Examination findings are likely visual acuity; if not 6/6, check with a pinhole. Perform a thorough examination of the cornea, anterior chamber, iris, pupil, and lens for any signs of distortion that could suggest ocular penetration, necessitating immediate referral to an ophthalmologist. Additionally, evert the eyelids to rule out the presence of retained sub-tarsal foreign bodies and remove them if deemed appropriate (Das et al., 2021; Salmon, 2020).

Visual acuity, examination of the anterior segment, and the presence of foreign bodies should be assessed and documented thoroughly. It is crucial to ascertain the time of injury, as optimal repair should be performed within 24 hours of the trauma. A comprehensive review of the patient's past ocular and surgical history is essential for assessing visual potential (Hapsari & Doemilah, 2022; Wang, 2020). This case report will explain the extraction of foreign matter in the palpebra.

CASE REPORT

A 50-year-old male farmer presented to the emergency room with a two-day history of persistent discomfort in his left eye. The cries of pain, especially when the eyes were closed and filled with watery eyes, without blurred vision. The patient said, while working on the rice field, he was struck in the left eye by a rice stalk thrown by his co-worker. In the beginning, the patient felt this sensation could be lost by blinking. But unfortunately, he still felt the sensation for two days after the incident.

At physical examination, he was in a good state, compos mentis, blood pressure 130/80 mmHg, pulse 76x/minute, respiratory rate 20x/minute, temperature 36.5 ˚C. At the general examination, there were no abnormalities. In the ophthalmological status of the right eye, its visual acuity was 6/6, the examination of the anterior segment was fine, and the pressure of the intraocular was 18 mmHg using a Schiotz tonometer. In the ophthalmological status of the

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Figure 1. Corpus alienum of conjunctiva palpebra oculi S demonstrated by the marks on the arrows (7 o'clock), diameter +- 1 mm with length +- 5 mm (This image was captured from the patient)

left eye, its visual acuity was 6/6; there was no edema and spasm in the palpebrae superior and inferior. Movement of the left eye was good in all directions. The pressure of the intraocular was 18 mmHg using a Schiotz tonometer. In the eyelid eversion examination, we didn't find any foreign body there. The foreign body appeared to be a piece of grain embedded in the conjunctiva palpebra inferior when the patient gazed to the left. In this case, we couldn't examine using a slit-lamp because we didn't have one in the emergency room.

The diagnosis in this patient is corpus alienum conjunctivae palpebrae inferior oculi sinistra. The primary treatment was mechanical extraction of the conjunctival foreign body. Moreover, its medication therapy is giving chloramphenicol topical ointment and sodium diclofenac orally and educating patients on how to prevent it by using self-protection while working, for example, glasses. The prognosis of the patients is generally reasonable.

DISCUSSION

Diagnosing a disorder in the eye requires a move to diagnosis that begins with anamnesis, general physical examination, ophthalmological examination, and supporting examination if needed. From the anamnesis conducted on the patient, it is suspected that a foreign body is present. Information regarding the patient's activities, environmental conditions, timing, and mechanism of trauma can be obtained.

Clinical symptoms that the patient may report include pain, a foreign body sensation, photophobia, excessive tearing, and redness of the eye. Organic substances such as vegetables, wood, and insects are poorly tolerated. This substance may cause infection, and it has to be removed promptly. The most prevalent plant foreign body is wood. Wood induced a less severe response that can lead to panophthalmitis, and blindness at worst or, at best, a scar that impairs vision permanently. As for inorganic material (such as metal, sand, stone, and graphite), some of them can cause toxic effects to the eye (iron may cause ocular siderosis, and copper may cause chalcosis). On physical examination, the patient was in good general condition, with vital signs and general status within normal limits. Ophthalmological examination revealed a visual acuity (VOS) of 6/6. In the inferior palpebral conjunctiva, a foreign body in the form of a rice stalk was observed, embedded at the 7 o'clock position to a depth of approximately 5 mm. In the

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eyelid eversion examination, we didn't find any foreign body there. The foreign body was only visible when the patient gazed to the left while we pulled down the lower eyelid. Consequently, the initial examination could appear normal if not conducted carefully. A slit lamp is preferred to determine the position and depth of the foreign body and to guide removal using a sterile hypodermic needle (often 25-gauge) (Fitriani & Nurwasis, 2024; Liang et al., 2021; Salmon, 2020).

According to the literature, ocular trauma caused by a foreign body may result in expected or decreased visual acuity, conjunctival injection, ciliary injection, the presence of a visible foreign object in the eye, distinct epithelial defects upon fluorescein staining and corneal edema (Jyoti et al., 2024; Zheng et al., 2024).

The definitive management for this patient is to remove the foreign body and prevent inflammation. This would involve the instillation of 1-2 drops of 2% pantocaine eye drops into the affected eye to allow the performance of local anesthesia. A cotton swab or 23-G needle can remove the foreign body. This is done by directing the instrument from the centre towards the periphery to avoid further injury to the ocular surface (Fernandez Ferro et al., 2019; Fraenkel et al., 2017).

Any insult from a foreign body to the eye may result in a spectrum of ophthalmic manifestations. A long-standing foreign body embedded in the conjunctiva may provoke a chronic inflammatory response, leading to the ultimate formation of a granuloma (Kalra & Sharma, 2024; Özbek et al., 2024). In most cases, there is a delay between the time of injury and presentation to the hospital. This is primarily due to distances to health facilities, lack of transportation, poverty, lack of awareness, and attempts at self-medication (Safari et al., 2023)

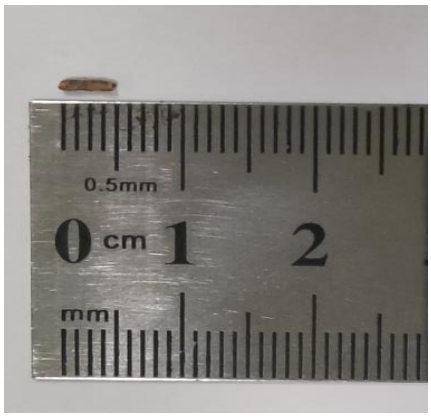

Figure 2. Splinter of rice stalk with length ± 5 mm (This image was captured from the patient)

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Figure 3. Size of needle 23G (This image was captured from the patient)

Figure 4. Granuloma of the eye (Madan et al., 2023).

In case one month of an untreated foreign body in a conjunctiva resulted in the development of a granuloma overlying the site of the foreign body. This development made extraction more challenging and enhanced the risk of residual scarring. It is a rather unusual case, usually neglected, and can also present as a foreign body granuloma (Kalra & Sharma, 2024; Suman et al., 2022).

In another case, a 5-year-old child sustained a corneal foreign body while playing with a wooden object with a friend. The parents brought the child to a doctor later that evening, and the patient was prescribed ofloxacin and dexamethasone eyedrops. However, five days later, the redness in the eye had worsened, and a granuloma was observed in the affected area (Madan et al., 2023).

Understanding granuloma formation is crucial for targeted treatment, focusing on removing the inciting agent and modulating the immune response. The process involves cellular and molecular responses, typically due to persistent infection, foreign body, or autoimmune triggers. It starts from persistent chronic antigen stimulation, and the immune system identifies the stimulus as indigestible or non-degradable, leading to prolonged inflammation. Therefore, it activates the T-cells, such as CD4+ T-helper cells release cytokines, including interferon-gamma (IFN-γ), which activate macrophages. The activated macrophages then differentiate into epithelioid cells, which have enhanced phagocytic and secretory functions. Epithelioid cells may fuse to form multinucleated giant cells, typically seen in granulomas. The granuloma may resolve if the inciting agent is cleared, with macrophages and lymphocytes dissipating and fibrosis regressing. But if the inciting agent is persistent, the chronic granulomas may persist, leading to tissue remodeling, scarring, and potential functional

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Figure 6. 1-month after extraction (This image was captured from the patient)

impairment (Daumas et al., 2020; Elnahry et al., 2021).

After removing the foreign body, the affected eye was padded using ciprofloxacin ointment. Additionally, tropicamide 0,8% and phenylephrine 5% eyedrops were administered. The patient was advised to return for a follow-up examination the following day to monitor the healing process and check for complications. A broad-spectrum antibacterial should be prescribed, and treatment should be continued to manage a corneal abrasion. Additionally, the patient should be advised to avoid rubbing their eyes to prevent further irritation or complications (Salmon, 2020; Shrestha et al., 2022; Zhao et al., 2020).

In post-extraction of this case, pharmacological therapy, chloramphenicol eyedrops, and sodium diclofenac are given. Chloramphenicol is given to avoid bacterial infection post-extraction. Sodium diclofenac is an analgesic to relieve pain. These two medications are selected because there is a limitation in other topical ocular preparations.

Topical ophthalmic treatments include eye drops, ointments, and antibiotic gels. These antibiotics are prescribed for both therapeutic and prophylactic purposes. In superficial eye infection, topical antibiotic therapy provides good bioavailability at the ocular surface, equal to or higher than systemic antibiotic therapy, and allows the treatment of most infections of the anterior ocular pole. Chloramphenicol has in vitro bacteriostatic or bactericidal action depending on the bacterium and the concentration achieved at the site of infection. It has a broad spectrum, being active on both gram-positive and gram-negative bacteria, both aerobic and anaerobic bacteria. Given the advantages of this antibiotic (low cost, very affordable, broad spectrum, good activity on bacterial strain), chloramphenicol continues to be indicated as first-line treatment in numerous international therapeutic guidelines for superficial anterior pole eye infections (Aramă, 2020). After one month post-extraction, the patient feels better without any symptoms and can do daily activities as usual.

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CONCLUSION

A foreign body in the conjunctivae palpebrae is an ocular emergency. The extent of examination to locate the foreign body's site includes meticulous examination of the smallest area by evertting the eyeball and pulling down the lower eyelid. A foreign body in the conjunctivae palpebrae is an extraocular foreign body that needs to be removed. Pharmacological therapy includes antibiotics and analgesics to prevent complications.

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