Clinical observation of 184 cases of corneal foreign body removal surgery

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Corneal foreign body refers to an ophthalmic emergency characterized by persistent foreign body sensation, redness, tearing, photophobia, etc., caused by the attachment or embedding of iron shavings, coal, sand, insects, and other foreign objects on the cornea. Persistent corneal foreign bodies can cause white blood cell infiltration, while iron foreign bodies that persist for several hours may cause rust spots to settle. If left untreated, it may lead to keratitis, ulcers, perforation, and endophthalmitis[1]. Timely removal of corneal foreign bodies can significantly reduce the aforementioned risks. This article reports on 184 patients diagnosed with corneal foreign body and undergoing corneal foreign body removal surgery in our hospital.

1 Clinical data

1.1 General Information: 184 patients who underwent corneal foreign body removal surgery in our hospital from January 2022 to July 10, 2023 were selected, and their gender, age, duration of onset, nature of foreign body, depth of corneal invasion, and prognosis improvement were collected.

1.2 Method: All patients underwent corneal foreign body removal surgery under slit lamp. Specific operation: (1) Anesthesia: Before surgery, all patients were given 2-3 drops of propacaine hydrochloride eye drops for surface anesthesia of the affected eye. For those with obvious dirt around the conjunctiva and eyelid skin, physiological saline was given to rinse the conjunctiva and surrounding skin before surface anesthesia. (2) Operation: Fix the patient's head on the slit lamp chin rest, with the forehead tightly attached to the forehead rest. Instruct the patient to keep their eyes fixed on the doctor's guidance to avoid damaging other normal structures of the eye due to eye rotation during foreign object removal. For emotionally tense individuals, provide preoperative guidance. For younger individuals with poor coordination or tight eyelids, use an eyelid opener to open the eyelids; For foreign objects such as glue that only invade the corneal epithelial layer, completely wet the cotton swab with ofloxacin eye drops and wipe off the foreign object; For foreign objects that invade the corneal stroma layer, use a syringe to remove them. Syringe treatment: bend the tip of a 1ml syringe (with a needle, needle size: 0.45 * 15.5mm), about 0.8-1cm behind the tip, and bend the needle cap about 15 ° -30 °. Hold the syringe in the right hand, with the needle at an angle of about 30 ° -45 ° to the surface of the corneal foreign object, and fix the upper eyelid skin with the left thumb; Remove corneal foreign objects, scrape away rust and corneal epithelium with obvious inflammatory cell infiltration around the foreign object, and stick the removed foreign object to a cotton swab. After the surgery, show it to the patient and accompanying personnel; For those with extensive and difficult to completely remove rust invading the cornea,

secondary removal should be performed 1-2 days after surgery based on follow-up results. For those with concomitant anterior chamber inflammation, tobramycin injection+dexamethasone sodium phosphate injection+lidocaine hydrochloride injection subconjunctival injection should be given; All operations follow the principle of sterile operation; (3) Postoperative treatment: except for those with a wide range of corneal epithelial defects (1 case) who need to wear a bandage lens, the rest of the patients were given antibiotic eye drops, bovine blood deproteinized eyes, gel eye drops and bandaged eyes for 4 hours to avoid secondary corneal damage and infection caused by eye rubbing during the anesthesia period; After 4 hours, the gauze was removed, and antibiotic eye drops and calf blood deproteinized eye gel were given to the operative eye. The patient was told not to rub the eyes, and the drug was used on time. The necessity of reexamination and the possibility of secondary foreign body removal were emphasized.

2 Results

2.1 General situation

There were 168 males (91.30%) and 16 females (8.70%). The age range is 5-72 years old, with an average of 40.75 ± 12.90 years old. The onset time ranges from 0.5 hours to 15 days, with an average onset time of 3 days. Nature of foreign bodies: Mainly composed of iron (82.06%), glue (6.40%), insect wings (3.70%), etc., 23 cases (12.4%) invaded the corneal epithelium, 158 cases (85%) invaded the superficial layer of the stroma, 3 cases (1.6%) invaded the deep layer of the stroma, and 3 cases (1.6%) complicated with anterior chamber inflammation. Among them, 6 cases (3.27%) had bilateral foreign bodies, 178 cases (96.73%) had unilateral foreign bodies, and 2 cases had multiple foreign bodies in one eye. All patients were accompanied by varying degrees of foreign body sensation, tearing, conjunctival congestion, and other clinical manifestations during treatment.

2.2 Prognosis

170 patients were followed up by phone call and re examination at the hospital 1-3 days after surgery, and the foreign body sensation disappeared without obvious discomfort. Except for those who injured the corneal epithelium, the cornea was transparent after surgery. Other patients had varying degrees of corneal scars around the original foreign body, and there was no subjective significant decrease in postoperative subjective vision that did not reach the pupil area. 14 patients underwent a second corneal foreign body removal surgery due to a long onset time and a large area of rust invading the cornea. The foreign body sensation disappeared after the surgery, and corneal scars were obvious after recovery.

3 Discussion

Corneal foreign bodies are more common in clinical practice. Iron foreign bodies are more common in young and middle-aged men, while glial foreign bodies are more common in children and women. Iron foreign body patients often work for decoration, cutting on construction sites, welding, etc., and are mostly single foreign bodies in one eye. Due to the lack of prevention awareness and untimely treatment, patients

often rub their eyes or use sharp objects such as paper to remove foreign bodies on their own, often scratching the corneal epithelium, Even squeezing foreign objects deeper into the cornea can cause corneal and conjunctivitis; The young and middle-aged patients with iron corneal foreign bodies collected in this article often seek medical attention for 3 days or more, and even up to 15 days. At the time of treatment, there is already a rust ring accompanied by infiltration of surrounding inflammatory cells, and even 3 cases of anterior chamber inflammation, which has varying degrees of impact on postoperative vision and eye comfort. For patients with rust ring infiltration, they often need to undergo secondary or even tertiary removal, greatly delaying corneal healing time. By making simple improvements to the syringe needle, it can be easily removed, scraped, picked, and removed. The bent needle can be positioned more accurately, reducing the risk of sudden eye rotation and puncturing during surgery. This maximizes the removal of foreign objects and rust, reduces the number of times foreign objects are removed, and improves postoperative patient comfort [2-3]; Postoperative bandaging of the surgical eye is necessary to avoid rubbing the eyes due to discomfort, aggravating infection or corneal epithelial peeling. All patients should be informed of the necessity of postoperative follow-up to avoid unnecessary disputes caused by unclear explanations or failure to inform precautions. Due to the random location of foreign body attachment to the cornea, the consequences are also varied. Therefore, it is necessary to partition and grade the cornea. Zhang Li [4] graded the invasion of foreign bodies and divided the cornea, which can effectively distinguish the pathological structure of foreign bodies. From medical records to postoperative follow-up, it has ideal application value and is worthy of clinical rational application.

References

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