Comparative analysis of the effect of lidocaine and obucaine in the treatment of electro-optic ophthalmia

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Abstract
Objective To investigate the effect of topical anesthetics lidocaine and obucaine in the treatment of electrooptic ophthalmia.
Methods patients with electro-optic ophthalmia diagnosed in our hospital were retrospectively selected and divided into two groups according to the types of anesthetics used for the first time. Group A was given lidocaine hydrochloride injection (10 cases, 20 eyes) and group B was given 0.4% obucaine eye drops (10 cases, 20 eyes). The symptom improvement of the two groups was analyzed.
Results In group A, there were 6 patients whose symptoms were significantly relieved within 1 day, and the remission rate was 60%; In group B, there were 10 cases (20 eyes) with obvious symptom relief within 1 day, and the relief rate was 100%; No corneal scar was left in both groups.
Conclusion In the treatment of electro-optic ophthalmia, obucaine, a surface anesthetic, is better than lidocaine.
Key words electro optic ophthalmia; UV; Anesthetics

Electro optic ophthalmia caused by ultraviolet radiation is a very common emergency disease in ophthalmology. It mostly occurs in welding workers and UV radiation sources such as mistaken vision of UV lamps. In our department, 20 patients with electro-optic ophthalmia were treated in groups. The analysis report is as follows.

1 Data and methods

A retrospective study selected 20 patients (40 eyes) with electro-optic ophthalmia treated in our hospital from August 2021 to may 2023, and divided them into two groups according to the type of anesthetic drugs used for the first time. Group A was given levofloxacin eye drops (5ml Shentian pharmaceutical) + lidocaine hydrochloride injection (5ml / 0.1g Shiyao Yinhu Pharmaceutical Co., Ltd.) and calf blood deproteinized extract ophthalmic gel (Shenyang Xingqi ophthalmology Co., Ltd.) for 4 times / day alternately; Group B was given levofloxacin eye drops (5ml Shentian pharmaceutical), 0.4% obucaine eye drops, and calf blood deproteinized extract ophthalmic gel (Shenyang Xingqi eye medicine Co., Ltd.) for four times a day. Both groups were treated with local cold compress to relieve pain, coated with deproteinized calf blood extract gel at night and bandaged both eyes.

2 Results

In group A, there were 10 patients (20 eyes), 7 males (70.00%), aged 22-68 years,

with an average of 39.90 ± 12.87 years. In group B, there were 10 patients (20 eyes), 9 males (90.00%), aged 17-60 years, with an average of 43.40 ± 18.70 years.
In group B, there were 10 cases (20 eyes) with obvious symptom relief within 1 day, and the relief rate was 100%; In group A, there were 6 patients whose symptoms were significantly relieved within 1 day, and the relief rate was 60%. The pain symptoms of 4 patients who did not relieve were relieved after switching to obucaine. Two groups of patients recovered completely after 2-3D, corneal fluorescein staining was negative, and no corneal scar was left.

3 Discussion

Electro optic ophthalmia is the most common radiation injury in Ophthalmology, which is the result of direct exposure of the eye to short wave ultraviolet light. It is generally believed that the ultraviolet wavelength that damages the cornea is short wave ultraviolet with a wavelength below 320nm [1], while there is a large amount of short wave ultraviolet in the rays emitted by welding light and medical ultraviolet disinfection lamp. Due to the lack of shaped cornea, the cornea has a low resistance to ultraviolet light, which can cause corneal protein degeneration and coagulation, so that the corneal epithelium falls off [2], and it generally takes 48h to heal itself. The cornea is rich in nerve endings, which are innervated by the ocular branch of the trigeminal nerve. When the corneal epithelium is damaged, sensory nerve exposure will cause severe corneal irritation. For severe electro-optic ophthalmia, in addition to using narcotic drugs, patients should have a proper rest, pay attention to eye hygiene, and use some antibiotic eye drops in combination, which can promote the recovery of the disease [3].

For the treatment of electro-optic ophthalmitis, amide narcotic drugs are mainly used, while lidocaine and obucaine are more widely used in ophthalmology. Jishengfang and Liu Mei [4] analyzed the treatment of 93 cases of electro-optic ophthalmia with lidocaine. Lidocaine has a good therapeutic effect on electro-optic ophthalmia, but lidocaine has no eye drop dosage form in the current market. Most of its injections are used after dilution with other solvents. Its concentration varies greatly, and there are potential safety problems. Clinically, it is more used for infiltration anesthesia, sacral canal block anesthesia, epidural block anesthesia, peripheral nerve block anesthesia and intravenous injection for anti arrhythmia, etc; Lidocaine has a relatively longer onset time for topical anesthesia of skin mucosa and other tissues than oxybucaine eye drops[5], while oxybucaine has an onset time of only more than 10 seconds, which can quickly relieve discomfort symptoms such as ocular irritation.

The results of this study showed that obucaine was superior to lidocaine in the analgesic effect of anesthesia for electro-optic ophthalmia, but its clinical popularization was poor. In this study, only 20 patients with electro-optic ophthalmia were selected, and the sample size was small; Due to the retrospective study, the data is incomplete, and only the short-term symptom relief is concerned. Other ocular irritation symptoms and slit lamp examination results of the patients are not analyzed and discussed. In conclusion, to improve the research on the effect of surface

anesthetics lidocaine and obucaine in the treatment of electro-optic ophthalmitis, it is necessary to expand the sample size, formulate evaluation criteria and more rigorous design to improve the scientificity and reliability of the research, and provide more valuable guidance for the selection of surface anesthetics in the treatment of electro-optic ophthalmitis.

References

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