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Case Report

Complications and Management of the Excessive Fibrin Glue in Anterior Chamber: Case Report

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Abstract

A 36 year-old 9-week pregnant female presented with redness, pain and photophobia in the left eye. Best corrected visual acuity (BCVA) was 20/33. Slit-lamp examination revealed a 1.5 mm perforation area in the paracentral cornea. Fibrin glue was placed in the corneal perforation area for sealing and secured with bandage contact lenses. During the procedure, an excessive amount of fibrin glue was mistakenly injected into the anterior chamber (AC). On the postoperative first day, there was moderate AC reaction with raised intraocular pressure (IOP). Topical steroid and anti-glaucomatous treatment were administered. During the follow-up, complete dissolution of fibrin glue and regression of AC reaction was observed, and IOP went back to normal. Two weeks after fibrin glue injection, corneal integrity has achived and AC depth was normal with residual fibrin glue particles. BCVA increased to 20/25. Ocular findings remained stable during the follow-up for 18 months. Clinicians should be aware of the possible side effects of fibrin glue application. Careful observation and accurate management of the secondary complications are crucial to prevent further damage.

Keywords: Corneal Perforation; Fibrin Tissue Adhesive; Anterior Chamber; Intraocular Pressure

Introduction

Corneal perforation is a sight-threatening ocular emergency that may occur secondary to traumatic or non-traumatic etiologies [1,2]. Infectious keratitis is one of the most significant cause of non-traumatic corneal perforations. While bacterial or fungal agents are the most common cause of infectious non-traumatic corneal perforations in developing countries, recurrent herpetic keratitis is still the leading cause in developed countries [3].

Early diagnosis and management are critical to prevent further damage in corneal perforations. As a tissue adhesive, fibrin glue is a safe and effective material which is widely used in small corneal perforations [4] However, its accumulation in large amounts in the anterior chamber (AC) may cause secondary complications. Pupillary block glaucoma, intraocular pressure (IOP) elevation and AC reaction has been reported due to excessive intracameral fibrin glue [5].

Herein, we report a case with AC reaction and elevated IOP secondary to inadvertently excessive amount of intracameral fibrin glue injection through corneal perforating wound.

Case Description

A 36 year-old 9-week pregnant female presented with red eye, mild discomfort and photophobia in the left eye. Best corrected visual acuity (BCVA) was 20/20 OD and 20/33 OS. The slit lamp examination of the left eye revealed a descemetocele with 1.5 mm perforation area in the paracentral cornea. (Figure 1a). New blood vessel extending to the perforation site was present. There was a slightly shallow AC and low IOP on the left. The presence of reduced corneal sensation was consistent with herpetic neurotrophic keratitis on the left eye. Slit lamp and fundus examination in the right eye were unremarkable and IOP was within normal limits. Topical 0.5% moxifloxacin (Vigamox, Alcon, US) 4 times daily was initiated in addition to the conservative treatment with bandage

contact lenses. Considering that she was in the first trimester of her pregnancy, conservative treatment was started with bandage contact lens and topical 0.5% moxifloxacin (Vigamox, Alcon, US) 4 times a day. Neither systemic antiviral nor systemic doxycycline treatment was started. Despite the treatment, the shallowing in AC progressed by 2 weeks and seidel test was positive. (Figure 1b) Fibrin glue was placed in the corneal perforation area for sealing and secured with bandage contact lenses. During the procedure, an excessive amount of fibrin glue was inadvertently injected into the AC through the perforating wound. (Figure 1c). Considering previous reports in the literature, observation was preferred without AC lavage [5]. On the postoperative 1st day, there was a moderate AC reaction and the IOP was 33 mmHg. (Figure 1d). In addition to topical antibiotic, topical dexamethasone four times daily, combination of timolol 0.05% + dorzolamide 2% (Tomec, Abdi Ibrahim, Turkey) twice daily, 1% cyclopentolate (Sikloplejin, Abdi Ibrahim, Turkey) three times daily and preservative free artificial eye drops (Refresh, Allergan, US) four times daily were initiated. In the follow-up, the fibrin glue was completely dissolved, the AC reaction regressed, and the IOP went back to normal. Two weeks after fibrin glue injection, corneal integrity was stable and AC depth was normal. However, residual fibrin glue particles were present on the iris and crystalline lens. (Figure 1and 2) Topical antibiotic, cyclopentolate and anti-glaucomatous treatment were discontinued and the steroid was tapered and stopped according to the AC reaction. Final BCVA was 20/25 OS and the ocular surface remained stable with intact cornea at 18 months.

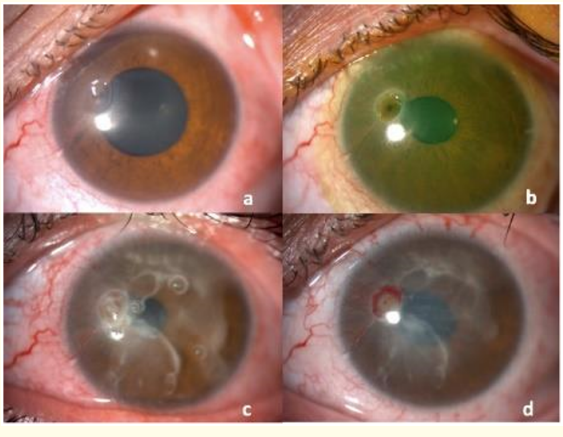

Figure 1: Anterior segment photograph of the left eye; at presentation descemetocele and corneal perforation (a), during conservative treatment total loss of anterior chamber occurred (b), intracameral excessive fibrin glue at the operation day (c), postoperative first day with a moderate anterior chamber reaction (d).

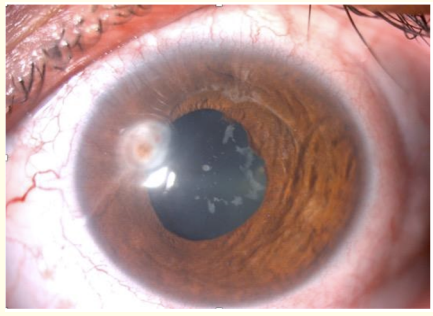

Figure 2: Anterior segment photograph of the left eye at the second week visit with the dissolution of fibrin glue and regressed anterior chamber reaction.

Discussion

The early management of the corneal perforation has a critical role on maintain the ocular integrity [1]. Gluing techniques are rationally effective in small corneal perforations. Fibrin glue as a gluing agent is a biocompatible and biodegradable material [3]. While there are several studies reporting the use of fibrin glue in corneal perforations, only a few reports mentioned the effects of intracameral fibrin and its complications in corneal perforation management [6-9].

Neurotrophic keratopathy is one of the leading causes of corneal perforation due to Herpes Simplex Virus (HSV). It is characterized by epithelial destruction and impaired healing of the cornea, resulting in corneal ulceration, melting, and followed by perforation. Superficial neovascularization and stromal scarring may indicate previous HSV infection [9]. In the present case, despite having corneal perforation, the patient reported only mild discomfort, redness and photophobia without any pain. The presence of symptoms disproportionate to the findings was explained by the absence of corneal sensation. The presence of neovascularization extending to the perforation site supported the preliminary diagnosis of HSV. Since it was in the first trimester of her pregnancy, neither systemic antiviral nor systemic doxycycline treatment was started. Following failure of first-line therapy (bandage contact lens and topical medication), fibrin glue was applied to seal the leak.

Although fibrin glue is a biocompatible substance, it may cause secondary complications, especially when it is accumulated in large amounts in the AC [2]. Increased IOP, which may occur due to inflammation or progressive peripheral anterior synechia, has been reported in previous studies. However, in most cases it is

temporary and topical anti-glaucomatous therapy is usually adequate to control IOP elevation [5]. In addition, a few cases of AC inflammation due to fibrin glue have been reported [10]. The possible mechanism of the AC inflammation is an allergic reaction to the constituents of the fibrin glue. Herein, AC inflammation and elevated IOP occurred following fibrin glue application. In these cases, closely monitorization of raised IOP and AC inflammation is essential.

Various factors have been identified that increase the risk of secondary complications associated with fibrin glue application. Chew., *et al.* [5] experimentally demonstrated that the amount of intracameral fibrin was significantly associated with elevated IOP and increased pachymetry. In addition, fibrin glue is not recommended in patients allergic to bovine proteins, as it triggers an inflammatory reaction. In the present case, secondary complications resulted from inadvertently injection of excessive fibrin glue into the AC. In some cases, it may be challenging to determine the precise amount of fibrin material injected and this causes undesirable complications.

Conclusion

Fibrin glue adhesive is one of the treatment modalities to closure the small perforations and it can be easily applied. However, its accumulation in large amounts in the AC may cause AC inflammation and raised IOP [9]. With the presented case, we would like to emphasize the clinical side effects of excessive amount of intracameral fibrin glue. Clinicians should be aware of the possible side effects of excessive fibrin glue application into AC. In these cases, careful observation and accurate management of the secondary complications are crucial to prevent further damage.

Financial Disclosure

None.

Conflict of Interest

None.

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