Management of Corneal Neovascularization After Cement Splash Accident

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None of the authors have any financial disclosures.

Purpose

- Sight-threatening consequences of corneal neovascularization following alkali burn necessitates an examination of novel treatment approaches.
- The use of bevacizumab after severe alkali burn has only rarely been described in the ophthalmic literature. No previous work has examined the use of anti-VEGF agents in the treatment algorithm for management of corneal neovascularization after cement injury.
- We present a case of successful regression of neovascularization following the injection of bevacizumab after cement splash.

Materials and Methods

- Case report of a 35-year-old construction worker who suffered a cement splash to the eye (Figure 1) while working without protective eyewear and who developed extensive corneal neovascularization.
- Initially, the eye was irrigated, and extensive debridement of concrete and removal of necrotic conjunctive were performed.
- Ocular exams including visual acuity, anterior segment and retinal exams were performed. Number of subconjunctival injections of bevacizumab were documented.

Jeng, B. **My Patient Was Splashed With Cement in Both Eyes. He Has Red, Irritated Eyes and Blurry Vision. The Exam Shows Debris on the Conjunctiva and Under the Lids, Diffuse SPK in the Right Eye, and Central Corneal Epithelial Defect in the Left Eye. What Should I Watch for?** ***Curbside Consultation*****. www.healio.com**

Figure 1

Representative image

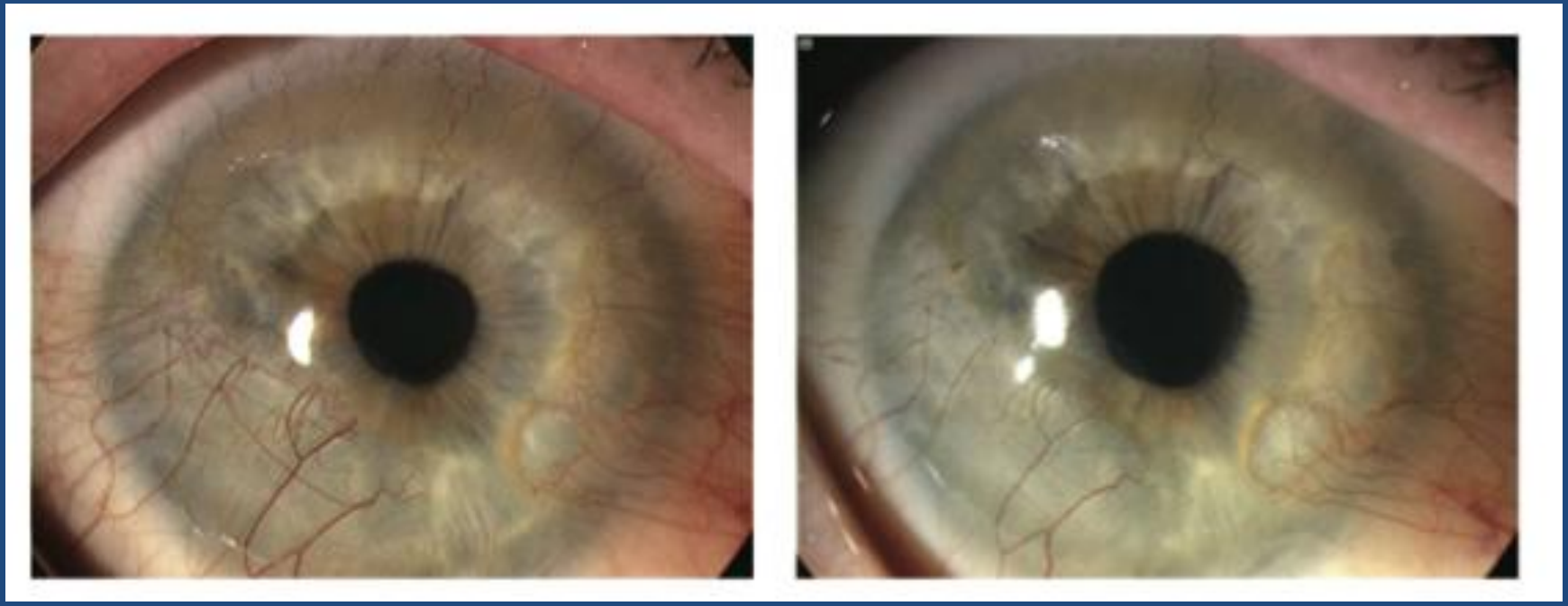
Results

- In the initial post injury period, visual acuity improved from 20/200 to 20/40 with re-epithelialization of the injured cornea.
- However, despite treatment with topical steroids, at two months, the visual acuity had worsened to 20/400 and extensive corneal neovascularization had developed (Figure 2A).

Results

- Subconjunctival bevacizumab injection (1.5mg/0.05mL) was performed and after four weeks, corneal vessels had thinned.
- Eight weeks later, a second bevacizumab injection (2.5mg/0.05mL) was administered, and at twelve-week follow-up after the second injection, visual acuity improved to 20/70. There was significant regression of corneal neovascularization and decreased stromal haze (Figure 2B).

Figure 2:
Pre and Post-Treatment with Subconjunctival Bevacizumab



A B

Representative image

Discussion

- Chemical burns to the eye are one of the most serious ocular emergencies and alkali burns are frequently the most devastating.
- Upon hitting the ocular surface, alkaline substances dissociate and saponification of cell membranes leads to penetration of the chemical into the cornea and anterior segment.
- Consequences include stromal haze, destruction of limbal stem cells, release of inflammatory mediators and damage to the trabecular meshwork, which can result in increases in intraocular pressure.

Discussion

- Immediate irrigation of the eye remains the gold-standard of treatment for chemical burns and should ideally be started at the scene of the injury. It is important to ensure that all chemical debris be removed from the eye as remaining particles will continue to cause damage.
- Double eversion of the eyelids is necessary to ensure that no chemical remains.
- Once all chemical particles are removed and pH is determined to be normalized, irrigation may be stopped and an exam may be performed, paying special attention to the intraocular pressure and areas of limbal ischemia as this will directly relate to patient outcome and should guide treatment.

Discussion

- Treatment should include a combination of steroids, antibiotic prophylaxis, cycloplegics, ocular hypertensive agents and lubricants as well as either vitamin C or doxycycline to prevent corneal melting.
- Severe burns may require amniotic patch grafts, however, each clinical situation is different and treatment must be tailored accordingly.

Conclusions

- Subconjunctival bevacizumab should be considered for treatment of corneal neovascularization following chemical injury and may help with regression of corneal vasculature.

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Acknowledgements

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