

Metallic corneal foreign bodies: an occupational health hazard

Corpos estranhos metálicos na córnea: um problema de saúde ocupacional

Dear Editor:

We have read with interest the article titled "Metallic corneal foreign bodies: an occupational health hazard for anesthetic abuse keratopathy", by Ozkurt et al.⁽¹⁾. The authors analyze the risk factors, outcomes, demographic characteristics, and attitudes of 100 workers who presented with a metallic corneal foreign body (FB) injury and recommend several prevention measures to lower the incidence of occupational eye injuries. We thank the authors for their study and would like to emphasize another issue associated with metallic corneal FBs: the problem of topical anesthetic abuse keratopathy (TAAK), which is unfortunately often overlooked and diagnosed late in these patients.

Topical anesthetics are mainly abused by young male manual laborers who are exposed to arc welding flash, metallic FB injuries and chemical injuries while working in welding operations and foundries⁽²⁾. Improper use of topical anesthetic agents results in superficial punctate keratitis, persistent corneal epithelial defects, ring-like or disciform stromal infiltration, endothelial cell loss, secondary infectious keratitis, and even corneal melting and perforation. This can result in permanent vision loss in severe cases that are not diagnosed or properly treated⁽²⁻⁴⁾. Therefore, TAAK has been a major health problem in these workers, particularly in developing countries. Clinical diagnosis is based on history and slit-lamp biomicroscopy findings. Hospitalization, along with promptly stopping the use of the topical anesthetic, psychiatric consultation, and close surveillance, are typically necessary because despite the warnings, most of these patients continue to use these agents during their hospitalization.

Because unregistered workers often do not have legal rights in cases of occupational accidents and are ineligible for free health care, they attempt to remove FBs on their own or with the help of their friends rather than seeking care from an ophthalmologist. Therefore, this situation may make a worker more vulnerable to TAAK after self-removal of the corneal FBs because in Turkey, the workers often use a topical anesthetic drop during this procedure. In addition, in most workplaces, particularly in developing countries, the employees can easily obtain topical anesthetic drops from pharmacies because prescriptions are inadequately monitored and the drops are available over the counter. In the study conducted by Ozkurt et al.⁽¹⁾, 55% of the employees were found to be unregistered and 52 patients (52%) attempted corneal FB removal on their own, which can cause further injury. Both FBs and the use of contaminated and potentially

harmful materials to remove them can lead to corneal infections. Furthermore, TAAK can make them more vulnerable to the infections because of changes to the ocular surface, such as insufficiency of the epithelial barrier and instability of the tear film^(2,4).

Yagci et al.⁽²⁾ reported 19 cases with TAAK, most of whom had been referred with a diagnosis of refractory infectious keratitis of unknown etiology after corneal FB and other occupational injuries. Ozkurt et al.⁽¹⁾ also reported that one patient had presented secondary infectious keratitis after he had removed the corneal FB on his own. We are unable to exactly diagnose TAAK in this case because the other clinical findings and history of the patient are not available. However, we speculate that this patient may have been a TAAK because we consider that he may have used a topical anesthetic drop during corneal FB removal and continued to use the drop. In such cases, for correct diagnosis, it is important to consider TAAK because these patients tend to hide their use of these drugs. Because TAAK had become a serious health care problem among male workers in Turkey, the government, in 2012, prohibited both over-the-counter sales of topical proparacaine (Alcaine®, Alcon) and prescription sales by pharmacies in workplaces⁽⁴⁾. Ozkurt et al.⁽¹⁾ recommended that workplaces at which there is an increased risk for ocular injuries should take more protective measures, such as the mandatory use of goggles and more educational programs for the workers and occupational physicians about the harm that can result from self-removal of corneal FBs and about repetitive corneal injuries. In addition, information should be provided about the risks associated with uncontrolled use of topical anesthetic agents. Over-the-counter sales of these drugs as well as prescription sales by pharmacies in workplaces should also be prohibited.

Saban Gonul, Banu Bozkurt, Suleyman Okudan

Submitted for publication: September 18, 2014

Accepted for publication: September 22, 2014

Department of Ophthalmology, Selcuk University Faculty of Medicine, Konya, Turkey.

Funding: No specific financial support was used for this study.

Disclosure of potential conflicts of interest: None of the authors have any potential conflicts of interest to disclose.

Corresponding author: Saban Gonul, Selcuk University Faculty of Medicine, Department of Ophthalmology, Konya, Turkey - E-mail: drsabanogul@gmail.com

REFERENCES

- Ozkurt ZG, Yuksel H, Saka G, Guclu H, Evsen S, Balsak S. Metallic corneal foreign bodies: an occupational health hazard. *Arq Bras Oftalmol.* 2014;77(2):81-3.
- Yagci A, Bozkurt B, Egrilmez S, Palamar M, Ozturk BT, Pekel H. Topical anesthetic abuse keratopathy: a commonly overlooked health care problem. *Cornea.* 2011;30(5):571-5.
- Rosenwasser GO, Holland S, Pflugfelder SC, Lugo M, Heidemann DG, Culbertson WW, et al. Topical anesthetic abuse. *Ophthalmology.* 1990;97(8):967-72.
- Burcu A, Dogan E, Yalniz-Akkaya Z, Ornek F. Early amniotic membrane transplantation for toxic keratopathy secondary to topical proparacaine abuse: a report of seven cases. *Cutan Ocul Toxicol.* 2013;32(4):241-7.