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Serious corneal melting and calcific band keratopathy associated with abuse of nonsteroidal anti-inflammatory and phosphate-containing eye drops after cataract surgery

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1. Case report

An 81-year-old woman was referred to our corneal department 3 weeks after an uneventful right eye (RE) cataract surgery with a corneal epithelial breakdown and stromal melting with calcium-phosphate deposition due to postoperative overuse of topical non-steroidal anti-inflammatory drugs (NSAID) drops and dexamethasone with phosphate-based excipient (Fig. 1). After the suspension of the offending drugs and starting treatment with a therapeutic contact lens, abundant artificial tears, topical antibiotic, and corticosteroid – all single dose preservative free eye drops –, it was possible to promote corneal re-epithelization, despite the persistence of a dense calcific keratopathy. Six months later, the calcific corneal band increased with visual axis involvement. Visual rehabilitation was started with an uneventful Deep Anterior Lamellar Keratoplasty (DALK) surgery (Fig. 2) In the most recent follow-up visit, the graft was transparent and well positioned, with no anterior chamber reaction (Fig. 3).

2. Discussion

This clinical case report highlights the risks associated with drug toxicity in patients' treatment from our daily practice. Continued use of topical NSAID may decrease normal corneal sensation and lead to epithelial erosions and defects, stromal melting and, ultimately, corneal perforation.[1] The use of eye drops containing preservatives may have significant consequences on the ocular surface as they contribute to chronic inflammation, particularly in long-term treatments.[2] The use of ophthalmic preparations with phosphate-based excipients in cases of epithelial breakdown may cause precipitation of calcium-phosphate deposits within the stromal collagen fibrils.[3] NSAID overuse combined with phosphate-containing eye drops potentiate both its adverse features, triggering ocular surface inflammation, painless corneal lesions and precipitation of calcium-phosphate deposits thus contributing to the development of toxic and neurotrophic keratopathies and calcific band keratopathy, such as the one described in this case report. These clinical situations can range from mild damage to serious sight-threatening conditions.

3. Conclusion

This case report raises awareness about drug toxicity and its potential deleterious complications and highlights the relevance of optimizing prescriptions always maintaining ocular surface integrity and avoiding iatrogenic harm to patients.

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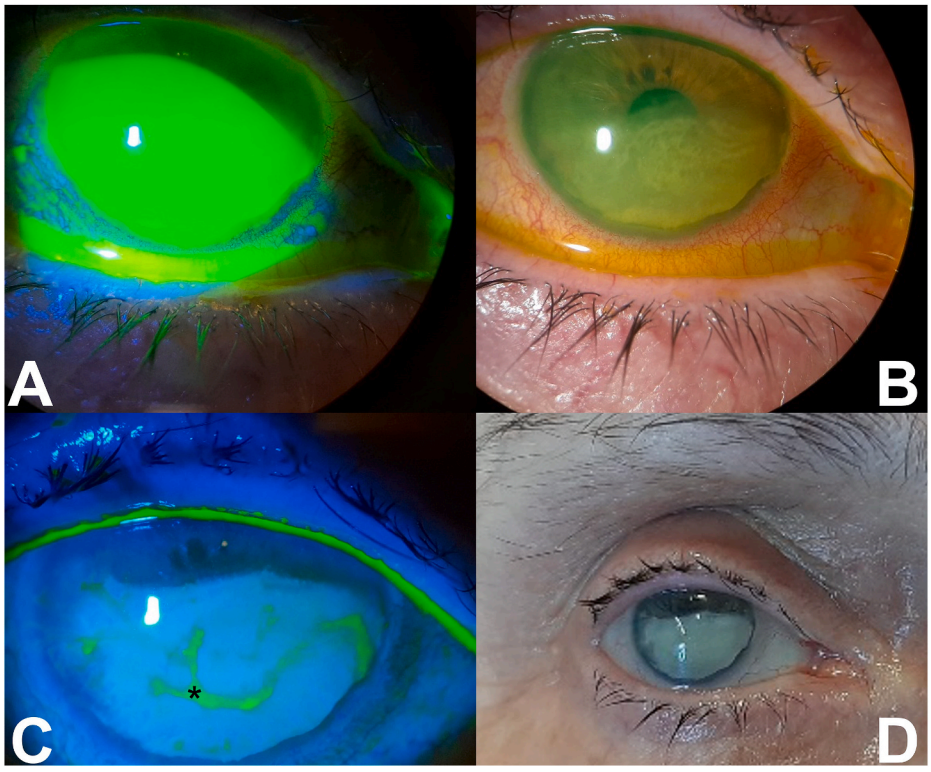

Fig. 1. [A] Corneal total epithelium loss. [B] Band of white calcific keratopathy developing inferiorly. [C] Corneal re-epithelization, with only small areas with fluorescein staining (*). [D] White opacification of inferior 180° of the cornea.

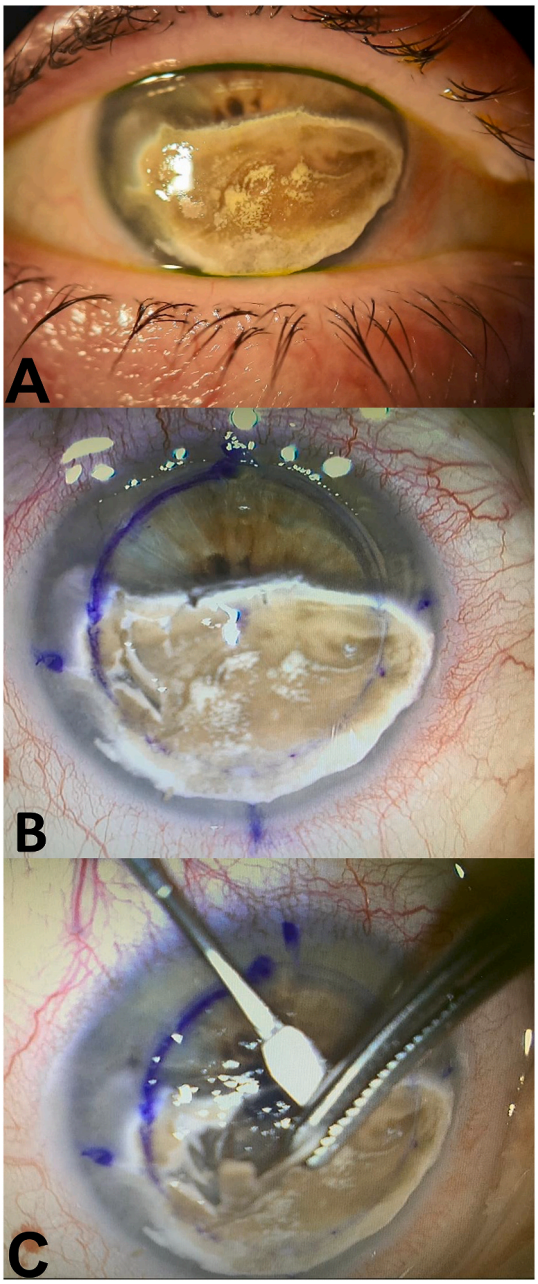

Fig. 2. [A] Calcific keratopathy totally involving the visual axis. [B] Receptor's cornea topographic marks. [C] Manual debridement of calcific plaque.

CRediT authorship contribution statement

Ana Margarida Ferreira: Conceptualization, Data curation, Formal analysis, Funding acquisition, Investigation, Methodology, Project administration, Resources, Software, Supervision, Validation, Visualization, Writing – original draft, Writing – review & editing. **Rodrigo Vilares-Morgado:** Conceptualization, Investigation, Methodology, Supervision, Validation, Visualization, Writing – review & editing. **Ana Maria Cunha:** Conceptualization, Resources, Writing – review & editing. **Teresa Dinah Bragança:** Conceptualization, Data curation, Investigation. **Pedro Neves Cardoso:** Conceptualization, Investigation, Software, Validation. **Luís Torrão:** Conceptualization, Supervision, Validation, Writing – review & editing. **Raúl Moreira:** Conceptualization, Validation. **João Pinheiro-Costa:** Conceptualization, Data curation, Formal analysis, Methodology, Project administration, Supervision, Validation, Writing – review & editing.

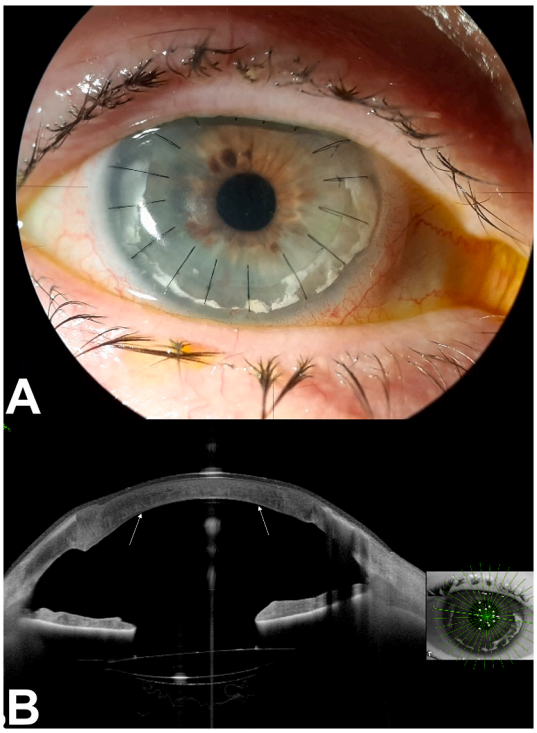

Fig. 3. [A] One day after DALK transplant, with 16 separated corneal sutures, no anterior chamber reaction, normal iris and pupil and intraocular lens well positioned. [B] Anterior segment OCT (*Anterion*®) image horizontal cut. DALK centrally, well positioned, full integrity of Descemet and endothelium of receptor cornea (arrows).

Patient consent

Written consent to publish this case and its details was obtained from the patient.

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Declaration of competing interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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