Bilateral acute angle-closure glaucoma following tramadol subcutaneous administration

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Abstract

Background: To report a case of bilateral acute angle closure-glaucoma following the use of subcutaneous Tramadol.

Case presentation: A 42-year-old healthy man with unremarkable past medical and ocular history, was admitted to the Orthopedic Department for surgical treatment of a bilateral open fracture of the femur following a road accident. Three hours after Tramadol subcutaneous injection, the patient complained of a bilateral acute painful visual loss with persistent vomiting. An ocular examination showed bilateral acute angle-closure-glaucoma. The patient was treated with topical anti-glaucoma therapy and intravenous Mannitol 20%. After resolution of ocular hypertension attack, NdYag laser peripheral iridotomy was performed on both eyes. After a follow-up period of 7 days visual acuity improved to 20/20 in both eyes and intraocular pressure returned to normal levels.

Conclusions: This case highlights the risk of developing bilateral acute angle-closure glaucoma after Tramadol administration.

Keywords: Angle closure glaucoma, Mydriasis, Tramadol, Anterior segment OCT
tomography (AS-OCT) performed during the acute phase demonstrated a closed iridocorneal angle with a markedly reduced anterior chamber depth of 1.9 mm (Fig. 2).

The diagnosis of bilateral drug-induced AACG in a predisposed patient was therefore made. The suspected culprit drug, Tramadol, was discontinued and intravenous mannitol 20%, topical anti-glaucoma drops and pilocarpin eye drops were administered.

Twenty-four hours later, the pain resolved and IOP dropped to 16 mmHg in both eyes. The pupils returned to normal size and were fully reactive. A second gonioscopy showed angles open to scleral spur without peripheral anterior synechiae.

On day three of follow-up, the corneas became clearer, IOP remained well-controlled and the fundus examination showed a hyperemic optic disc with normal C/D ratio. Subsequently NdYag laser iridotomy was successfully performed on both eyes (Fig. 3). The final visual acuity was 20/20 in both eyes and the intraocular pressure returned to normal levels.

Discussion

Acute angle closure-glaucoma (AACG) is a painful, potentially blinding disease. Many systemic drugs may precipitate bilateral acute angle closure attacks. The most common of these drugs are the -adrenergic (Adrenaline, Ephedrine) and anticholinergic drugs (Atropine) through pupillary block mechanism following mydriasis in predisposed individuals with narrow iridocorneal angles [5]. Ocular conditions that predispose to angle closure are high hyperopia, shallow anterior chamber, and thick lens [6].

Other drugs may produce bilateral AACG secondary to ciliochoroidal effusion with anterior rotation of the ciliary body and forward displacement of the lens-iris diaphragm [7, 8]. They include mainly sulfonamide derivatives and Topiramate [2, 7].

To the best of our knowledge, the association of Tramadol administration with bilateral acute angle closure has not been previously reported. Tramadol is a commonly prescribed opioid used in severe pain. Tramadol can cause miosis through stimulation of

Fig. 1 Slit-lamp photograph showing conjunctival injection associated with corneal edema and mid-dilated pupil in both eyes

Fig. 2 AS-OCT performed at the acute phase confirms the angle closure in both eyes (a and b). Note the presence of shallow anterior chamber (c)
opioid receptors [9] or mydriasis through stimulation of the adrenergic receptors [10]. In fact, it inhibits serotonin and noradrenaline reuptake from the synaptic cleft, and stimulates pre-synaptic release of serotonin [11]. Thus, the concentration of these two substances increases and so do their effects. The ubiquitous pupillary response to Tramadol may depend on individual metabolic abilities. In fact, miosis is more likely to occur in extensive Tramadol metabolisers while in intermediate and poor metabolisers, mydriasis might develop because of a delay in conversion of Tramadol to its active metabolite [12].

Conclusion
Tramadol administration may cause mydriasis which can precipitate an attack of acute AACG in predisposed individuals with shallow anterior chambers. All clinicians should be aware of the potential risk of AACG in patients treated with Tramadol.

Abbreviations
AS-OCT: Anterior segment optical coherence tomography; AACG: Acute angle-closure glaucoma; IOP: Intraocular pressure; LE: Left eye; RE: Right eye

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Not applicable.

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Availability of data and materials
Data for this case report were collected by chart review of the patient’s electronic medical record, which is not publicly available due to privacy considerations.