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## Short communication

# Retinal toxicity after accidental intravitreal injection of mepivacaine and adrenaline<sup>☆</sup>

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### ABSTRACT

**Case report:** The case is presented of a 32 year-old male with no medical history of interest who suffered a traffic accident with mild traumatic brain injury. He had a left supraciliary incised and contused wound that extended to the left upper eyelid, with no loss of vision.

After palpebral anesthetic injection, there was a sudden visual acuity decrease in the left eye and hyposphagma located between I-III at 4 mm from the limbus, with increased intraocular pressure. A whitish lesion with a central hemorrhagic focus was observed in the ocular fundus, corresponding to the area where the hyposphagma was located.

**Discussion:** Anesthetic injection during palpebral repair may be complicated by inadvertent penetration of the eyeball. Intravitreal mepivacaine and adrenaline could cause macular and retinal lesions.

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## Afectación retiniana tras inyección accidental intravítrea de mepivacaína y epinefrina

### RESUMEN

**Caso clínico:** Varón de 32 años sin antecedentes de interés que sufre accidente de tráfico con trauma craneoencefálico leve, con herida inciso-contusa supraciliar izquierda que se extiende al párpado superior izquierdo sin pérdida de visión.

Tras la inyección anestésica palpebral se produjo disminución de agudeza visual súbita del ojo izquierdo e hiposfagma localizado entre la I-III a 4 mm del limbo, con aumento de la presión intraocular. En el fondo de ojo se observó una lesión blanquecina con un punto hemorrágico central que se correspondía con el área del hiposfagma.

#### Palabras clave:

Toxicidad retiniana

Mepivacaína

Penetración inadvertida del globo ocular

Herida ocular penetrante

Epinefrina

Anestésico intraocular

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Discusión: La infiltración anestésica durante la reparación palpebral puede complicarse con la penetración inadvertida del globo ocular. La mepivacaína y epinefrina intravítreas pueden causar lesiones maculares y retinianas por sí solas, así como por el aumento súbito de la presión intraocular.

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## Introduction

Inadvertent penetration during anesthetic infiltration in palpebral surgery is infrequently described.<sup>1</sup> Incidence varies according to the type of anesthesia being applied and ranges between 0.006 and 0.075%.<sup>2</sup> In addition to the traumatic effect of the syringe that can produce corneal perforation, traumatic cataracts, vitreous hemorrhage, retinal tears or detachment, it is necessary to consider the damage produced by the use of anesthetics containing preservatives that are not indicated for intraocular use and could cause corneal or retinal toxicity.<sup>3</sup>

The majority of inadvertent penetrations are due to poor surgical technique in anxious or excessively sedated patients who do not cooperate appropriately.

The case of a patient with accidental intraocular infiltration of mepivacaine combined with epinephrine (20 mg/ml+0.01 mg/ml) is described. Additional components include sodium chloride, sodium meta-bisulphide, methyl parahydroxybenzoate, hydrochloric acid (for adjusting pH) and water for injectable preparations. Said infiltration produced temporary visual acuity (VA) impairment and inferonasal scotoma in the left eye (LE).

## Clinic case report

Male, 32, without relevant antecedents, who suffered a traffic accident with slight traumatic brain injury, comprising slight left supraciliary incision-contusional wound extending to the upper left eyelid. Examination excluded ocular globe compromise.

Inadvertent ocular globe perforation took place during anesthetic infiltration of the eyelid for surgical repair, with the patient referring sudden VA reduction and inferonasal scotoma in the LE. The ophthalmological examination carried out 30 minutes later showed that the patient had a maximum corrected visual acuity (MCVA) of 0.3 in said eye. Temporal superior hyposphagma was observed. The cornea was transparent and the anterior chamber was wide. The pupil exhibited midriasis that did not respond to light and accommodation. Intraocular pressure (IOP) was 38 mmHg. Ocular fundus (OF) revealed a poorly defined whitish area in the superior temporal peripheral retina corresponding to the hyposphagma area (Fig. 1).

One week later, VA had improved to 1.0 and IOP was 12 mmHg. Fluorescein angiography showed slight uneven hyperfluorescence in the injured area, corresponding to



Fig. 1 – Photographic composition showing the subretinal anesthetic injection area.

hyper- and hypo-pigmentation of the retina pigment epithelium (RPE) in retinograph. The optic disc (OD) and macula were normal excepting for the presence of pigment alterations in the papillomacular bundle.

Optical coherence tomography (OCT) (DRI OCT Triton Plus, Topcon Medical Systems, Inc, Oakland, NJ, USA), did not show significant alterations in the OD or the macula (Fig. 2). Campimetry (Humphrey; central 30-2, threshold test) taken 2 weeks after the accident showed inferonasal scotoma in the LE corresponding to the area of the injection.

The patient was treated with moxifloxacin (one drop every 6 hours) and azithromycin (one drop every 12 hours) during one week, 500 mg/day of levofloxacin during one week and 90 mg/day of oral prednisone with progressive reduction.

Three months later, MCVA was of 1.0 in each eye, with persistence of LE campimetry defect (Fig. 3).

## Discussion

Intraocular injection of anesthetics could interfere with retinal transmission, inducing temporary blindness, without permanent toxic effects in animal models being described. However,

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