

## RETINAL NEOVASCULARIZATION IN A TRAUMATIC MICROHYPHEMA

## NEOVASCULARIZACIÓN RETINIANA EN MICROHIFEMA TRAUMÁTICO

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### ABSTRACT

**Clinical case:** This is a case of retinal ischaemia with subsequent neovascularization, in a 13 year-old boy who sustained a traumatic hyphema after blunt trauma.

**Discussion:** Hyphemas can occur after blunt trauma, intraocular surgery, spontaneously and in association with the use of substances that alter platelet or thrombin function (aspirin, ethanol). Associated injuries are traumatic anterior uveitis, iridodialysis, optic atrophy, secondary hemorrhage and a traumatic cataract. This case illustrates the formation of retinal neovascularization in association with a microhyphema and the need for careful and prolonged ophthalmological examination in this clinical context (*Arch Soc Esp Oftalmol 2006; 81: 549-552*).

**Key words:** Microhyphema, retinal hemorrhage, retinal ischaemia, retinal neovascularisation, blunt trauma.

### RESUMEN

**Caso clínico:** Informar un caso de isquemia retiniana con desarrollo de neovascularización, en un niño de 13 años con hifema traumático después de traumatismo contuso.

**Discusión:** El hifema puede ocurrir después de un trauma contuso, cirugía intraocular, espontáneamente y en asociación con el empleo de sustancias que alteran la función de plaquetas o trombina (aspirina, etanol). Daños asociados incluyen uveítis anterior traumática, iridodiálisis, atrofia óptica, hemorragia y catarata. Este caso demuestra la posible formación de neovascularización retiniana asociado a microhifema y la necesidad de un examen oftalmológico prolongado en este contexto.

**Palabras clave:** Microhifema, hemorragia retiniana, isquemia retiniana, neovascularización retiniana, trauma contuso.

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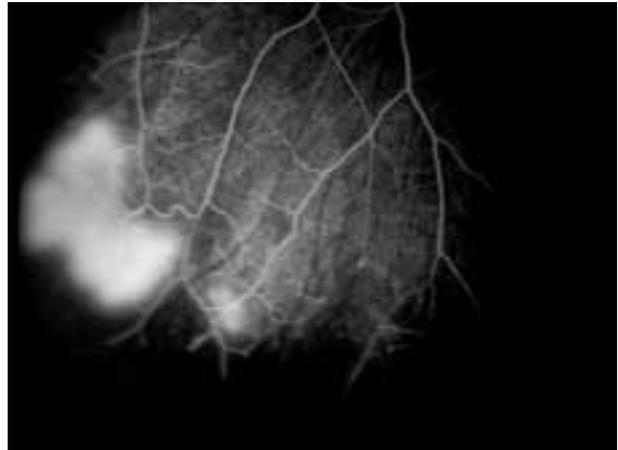
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## INTRODUCTION

Hyphema can arise after a concussion or intra-ocular surgery, spontaneously and in association with the use of substances which alter the platelet function or thrombin (aspirin, ethanol). Microhyphema is defined as a suspension of blood cells in the anterior chamber without the formation of a blood clot. Special measures must be adopted with young patients, as those under 6 exhibit an increased prevalence of clotting in the anterior chamber with the ensuing risk of developing amblyopia, which may arise as a result of the cornea being colored with blood. It is important to identify and treat associated ocular damages.

## CASE REPORT

A 13-year old child was referred for assessment after suffering an ocular traumatism in his left eye. His VA was of 20/20 in both eyes. The right eye assessment was normal and the left eye revealed a microhyphema and anterior uveitis. The left eye fundus under dilatation exhibited equatorial rounded retinal hemorrhages. The intraocular pressure values were normal (15 mmHg and 12 mmHg respectively). The patient developed an inferior peripheral retinal ischemia (confirmed by means of AFG) three weeks after the traumatism, when the patient referred a superior temporal peripheral scotoma which, twelve months later, developed with retinal neovascularization in the inferior nasal quadrant (fig. 1). A complete hematological study and blood coagulation tests were normal. In addition, the result of the falciform cell disease test was negative. The microhyphema and retinal hemorrhages were resolved with medical treatment (atropine sulphate 1% and topical corticoids, one-week eye protection, rest in bed the first 4 days with gradual return to activity, and restriction of salicylates and non-steroid anti-inflammatory drugs, oral administration of aminocaproic acid). Due to the complete resolution of the microhyphema in the first week and in absence of additional bleeding, no further studies were made for infrequent coagulation disorders such as the factor VIII and XI deficit or vitamin K deficit.

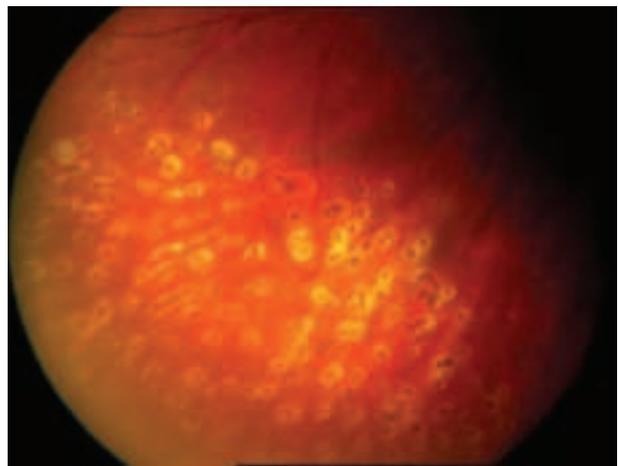


*Fig. 1: Fluorescein angiography showing retinal neovascularization with early leakage.*

The retinal ischemia was treated with argon laser photocoagulation (fig. 2). After 15 months follow-up, the patient's VA remains at 20/20 without additional ocular complications.

## DISCUSSION

Ocular damages secondary to eye concussions are frequently severe (1). These include corneal epithelial defects, traumatic anterior uveitis, iridodialysis and cyclodialysis, damages in the iris-corneal angle, ocular hypertension, peripheral anterior synechiae, optical atrophy, corneal hematic tincture, secondary hemorrhage and traumatic cataracts.



*Fig. 2: Eye fundus photography showing laser photocoagulation.*

Additional eye fundus changes described in the literature include retinal and vitreous hemorrhage, choroid rupture, epi-retinal membrane, combined occlusion of the central retinal artery and vein (2), parafoveal arterial obstruction, retinal rupture or detachment or eye globe rupture. The two most significant complications of traumatic microhyphema are increases in IOP and secondary hemorrhage (bleeding: 0-38%). In the presence of a delay in the resolution of the hyphema or a predisposition to bleeding with greater possibilities of increased IOP, it is recommended to discard other coexistent systemic diseases, falciform cell disease (3), hemophilia A or Factor VIII deficit, hemophilia C or factor XI deficit (4) and vitamin K deficit, among others. The treatment is focused on preventing further bleeding and maintaining safe IOP levels in addition to resolving the associated ocular damages (5).

The case described in this paper is the first description of a neovascularization process after microhyphema. If the neovascularization would have progressed untreated, the patient would have suffered serious consequences.

In cases with ocular traumatism due to concussion as in our patient, the anteroposterior compression leads to an equatorial expansion of the globe which damages the small blood vessels of the iris and the ciliar body, producing bleeding in the anterior chamber. The peripheral retinal blood vessels can be damaged in the same way giving rise to

ischemia, which can become a stimuli for the development of retinal neovascularization together with the release of a vessel proliferative factor, as was observed in other conditions leading to the development of retinal ischemia such as occlusion of the retinal vein, proliferative diabetic retinopathy or occlusive vasculitis (Eales disease).

By way of conclusion, this case illustrates the possible formation of retinal neovascularization in associated with microhyphema and the need of a careful and prolonged ophthalmological assessment in this clinical context.

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