Short communication

Premacular hemorrhage treatment with Nd:YAG laser: A clinical case

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ABSTRACT

Introduction: To report a case of premacular haemorrhage treated with Neodymium (Nd):YAG laser puncture.
Case report: A 54-year-old Caucasian female was seen in the emergency department with complaints of sudden loss of vision in her right eye (RE), detected on the previous day. The best-corrected visual acuity (BCVA) in the RE was reduced to light perception, and fundoscopy evidenced a large and dense premacular haemorrhage.
An Nd:YAG laser puncture was performed that day to drain the haemorrhage into the vitreous cavity. The intravitreal haemorrhage cleared in about 1 month, and the BCVA of the RE was 20/25 after 3 months.

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Tratamiento con láser Nd:YAG en una hemorragia premacular: caso clínico

RESUMEN

Introducción: Presentamos el caso de una paciente con una hemorragia premacular tratada con neodimio (Nd):YAG láser.
Casó clínico: Paciente de 54 años de edad fue a urgencias por pérdida repentina de visión en el ojo derecho (OD) desde el día anterior.
La máxima visión corregida del OD era la percepción de la luz y en el fondo de ojo se vio una hemorragia premacular de gran tamaño.
Se hizo el tratamiento con Nd:YAG láser en ese día para que drenase la hemorragia hacia la cavidad vitrea. En la hemorragia intravitrea había desaparecido al cabo de un mes y después de 3 meses la visión era 20/25.

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Introduction

Premacular haemorrhage in a healthy eye is an uncommon cause and involves a potential risk of loss of vision.

The exact location of premacular haemorrhage has not been well defined yet. Some studies claim that it is located in the subhyaloid space anterior to the internal limiting membrane (ILM).1 Other authors, such as De Maeyer, et al.,2 identified a cleavage plane below the ILM. That is the reason why we use “laser puncture” instead of “hyaloidotomy” or “membranotomy”.

Premacular haemorrhage may be idiopathic or secondary to Valsalva retinopathy, proliferative diabetic retinopathy, central retinal vein occlusion, macro retinal aneurysm, arterial hypertension, Terson syndrome, coagulation disorders, age-related macular degeneration or traumatological cause.

Spontaneous haemorrhage reabsorption is usually slow and may result in permanent loss of vision. Old haemorrhages may cause irreversible damage to the retinal pigment epithelium (RPE) due to haemoglobin toxicity, formation of epiretinal membranes or detachment caused by macular traction.3

Several treatment options for premacular haemorrhages have been proposed: pars plana vitrectomy,2 intravitreal application of tissue plasminogen activator and gas,4 argon laser and neodymium (Nd):YAG laser.3,5,6

In those cases in which the macula is not affected, conservative therapy is justified, observation being the first treatment.

Treatment with Nd:YAG laser is considered an alternative to treatment with vitrectomy in cases of premacular haemorrhage.3,5,6

Clinical case

This is the case of a 54-year-old patient seen in the emergency department with complaints of sudden loss of vision in her right eye (RE) since the previous day.

The patient reported a history of right eye cataract surgery 10 years ago, and also arterial hypertension controlled by means of drug treatment.

The best-corrected visual acuity (BCVA) in the RE was reduced to light perception, and in the left eye (LE) it was 20/25. Fundoscopy of the RE evidenced a large and dense haemorrhage (Fig. 1).

A Nd:YAG laser puncture (Ellex tango, Australia) was performed that day to drain the haemorrhage into the vitreous cavity. Two shots with a power of 5 mJ were applied to the lower part of the haemorrhage, away from the fovea. Blood moved towards the bottom of the vitreous cavity (Fig. 2).

The intravitreal haemorrhage cleared in about one month (Fig. 3). A fluorescein angiography was performed, which revealed that there were no major alterations, only a minor RPE atrophy in the target area of the shot.

A systemic medical examination to rule out other predisposing factors such as diabetes and coagulation disorders was performed.

After three months, the BCVA of the RE was 20/25 and the fundoscopy did not reveal signs of haemorrhage.
The patient was seen in a routine consultation a year later, where the same result was confirmed, with no ocular complications.

**Discussion**

Our patient had a good recovery of vision and complete reabsorption of the haemorrhage without complications during the year she was under observation.

In this case report, the most likely reason for the haemorrhage would be arterial hypertension. The patient does not remember having performed any Valsalva manoeuvre or having suffered a blow. No other cause was identified as the origin of the haemorrhage, such as the presence of proliferative diabetic retinopathy, macroaneurysm or choroidal neovascularisation.

Some studies\(^3,5^6\) show that the treatment of premacular haemorrhages with Nd:YAG laser causes rapid reabsorption of the haemorrhage and recovery of vision. Ulbig, et al.,\(^7\) treated 21 eyes with premacular subhyaloid haemorrhage of various causes with Nd:YAG laser. The drainage of the haemorrhage into the vitreous cavity resulted in an improvement of the BCVA (3 lines or more on a decimal vision scale) in 16 of the 21 eyes treated, and with a mean monitoring time of 22 months. In most of the cases, the macula looked good after one month of treatment.

One of the problems associated with Nd:YAG laser treatment is that we do not know exactly what the target anatomical structure affected will be, with some risk of damage to the retina.

We should recognise that the long-term results of this treatment are not known and that the studies published are limited to a small number of patients.

Vitrectomy is an alternative in the treatment of large, dense haemorrhages, which has been used worldwide. It allows immediate removal of the haemorrhage, locates exactly the place where the haemorrhage is\(^2\) and improves vision\(^2\); however, some surgery-related complications may occur.

The following are important factors in deciding what the treatment will be: patient age, duration, haemorrhage size and cause.

**Conflicts of interest**

The authors declare that they do not have any conflicts of interest.

**References**