Case Report

Nd:YAG Laser Treatment for Valsalva Premacular Hemorrhage

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Abstract

Purpose: To report a case of Valsalva premacular hemorrhage treated by Nd:YAG laser.

Methods: A patient who presented with Valsalva premacular hemorrhage was treated with photodisruptive Nd:YAG laser to drain the entrapped premacular blood into the vitreous.

Results: After photodisruption, vision in the affected eye improved rapidly due to exposure of the macula.

Conclusion: Nd:YAG laser treatment may be a good alternative for recent preretinal hemorrhages. Clinical benefits include rapid visual rehabilitation and the avoidance of vitrectomy. (***Eye Science 2013; 28:208-210***)

Keywords: retina; hemorrhage; laser treatment

Introduction

Valsalva retinopathy was first described in 1972 by Thomas Duane[1] as "a particular form of retin-opathy, preretinal and hemorrhagic in nature, secondary to a sudden increase in intrathoracic pressure." The circumscribed preretinal hemorrhage in Valsalva retinopathy usually leads to a sudden loss of vision. Spontaneous resorption of the blood entrapped in the subhyaloid space tends to be slow and may result in long-standing visual impairment[2]. A small premacular hemorrhage of one disc diameter caused by Valsalva retinopathy has been reported to resolve within several months, whereas a dense preretinal hemorrhage resulting from diabetic retinopathy persisted for more than one year[3]. To help restore vision rapidly in a patient with Valsalva retinopathy, we investigated the effect of Nd:YAG laser drainage of a premacular subhyaloid hemorrhage into the vitreous.

Case presentation

We reported a case of a 35-year-old male who presented with sudden painless blurring of vision in the right eye for seven days following severe vomiting. The patient had no history of systemic disease. His right vision was 20/200, and his left vision was 20/20. Fundus examination of the right eye showed a dense crescent-shaped preretinal hemorrhage overlying the macula (Figure 1). Optical coherence tomography confirmed the hemorrhage to be located just under the internal limiting membrane (Figure 2). We diagnosed the patient's status as Valsalva retinopathy. After counseling and informed consent, the eye was treated with photodisruptive Nd:YAG laser to drain the entrapped blood into the vitreous. Laser exposures were started with low energies of 2 mJ and then gradually increased until perforation became visible at the surface of the hemorrhage. The maximum energy applied was 8.5 mJ. The punctures were performed in the lower and prominent area of the hemorrhage to protect the foveola from the laser impact and to support outflow by gravity. Full drainage of the preretinal hemorrhage was achieved by making two punctures in close proximity. After the first puncture was made, the hemorrhage outflowed promptly (Figure 3). On the second day of photodisruption, a blurred vitreous body of floating erythrocytes and an annular preretinal hemorrhage surrounding the fovea were noted (Figure 4). After two weeks of photodisruption, the patient's right vision had improved to 20/20; only a slight preretinal hemorrhage was noticed far from the fovea(Figure 5).

DOI: 10.3969/j.issn.1000-4432.2013.04.009

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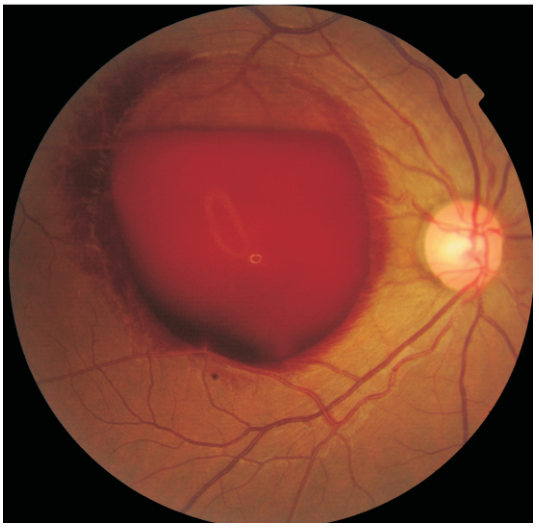

Figure 1 A dense crescent shaped preretinal hemorrhage overlying the macula in right eye

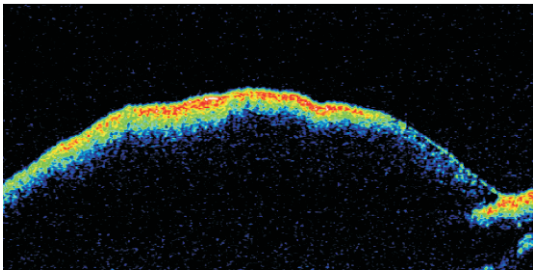

Figure 2 Optical coherence tomography confirmed a hemorrhage located under the internal limiting membrane

Figure 3 Hemorrhage outflowed into vitreous body pro-mptly after 1 puncture was made by a Nd:YAG laser

Figure 4 On the second day of photodisruption, a blurred vitreous body of floating erythrocytes and an annular preretinal hemorrhage surrounding the fovea were noted

Figure 5 After 2 weeks of photodisruption, little preretinal hemorrhage far from fovea was noticed

Discussion

Vomiting is one of the Valsalva maneuvers that increase intrathoracic pressure against a closed glottis, causing diminished venous return to the heart, reduced stroke volume, and an increase in intraocular venous pressure. This can cause retinal capillaries to spontaneously rupture, leading to a sudden loss of vision[4]. Spontaneous resorption of a preretinal hemorrhage entrapped in the subhyaloid space tends to

be slow and may result in long-standing visual impairment due to the toxicity of iron released from hemoglobin[5]. Based on our clinical observation, Nd:YAG laser treatment seems to be a safe and simple method for draining a preretinal hemorrhage overlying the macula into the vitreous body. Usually, soon after bleeding, the fluid level resulting from the settling of cellular components of the blood gives the characteristic boat-shaped appearance. With time, the hemorrhage turns yellowish because of degeneration of hemoglobin, this clotted blood is unlikely to drain into the vitreous gel even with a successful perforation[6]. For a recent preretinal hemorrhage, Nd:YAG laser treatment may be a good alternative for a hemorrhage beyond three disc diameters. Clinical benefits include rapid visual rehabilitation and the avoidance of vitrectomy. However, some authors have reported macular holes and retinal detachment as complications in cases with premacular hemorrhages after Nd:YAG laser treatment reported[7]. Thus, establishment of Nd:YAG laser treatment as a routine procedure for preretinal hemorrhage has to take into account both the risks and the benefits. Precise focusing of the surface of the hemorrhage also seems to be important, and energies should not exceed 9 mJ for safety reasons[7,8].

References

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