• CASE REPORT •

Intravitreal Bevacizumab for Peripapillary Subretinal Neovascular Membrane associated to Papilledema: A Case Report

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The purpose of this report is to document the use of bevacizumab as treatment of peripapillary subretinal neovascular membrane associated to idiopathic intracranial hypertension. This case reports a 31-year-old obese female with chronic papilledema due to idiopathic intracranial hypertension that developed an acute submacular hemorrhage due to a choroidal neovascular membrane in her left eye. Two separate intravitreal injections of bevacizumab (1.25 mg/0.5 ml) were administered with six weeks apart. Fourteen weeks after the initial injection her visual acuity improved to 20/40 in her left eye with associated angiographic resolution of the hemorrhage. Bevacizumab appears to be an effective option for patients who have subretinal neovascular membranes due to papilledema. Although choroidal neovascularization may have different pathogenic mechanisms, our case report demonstrates encouraging results without adverse ocular or systemic side effects. [*P R Health Sci J 2012;3:148-150*]

Key words: Peripapillary subretinal neovascular membrane, Bevacizumab, Papilledema

Idiopathic intracranial hypertension (IIH) or pseudotumor cerebri is a disorder of unknown etiology characterized clinically by symptoms and signs of increased intracranial pressure with normal cerebrospinal fluid (CSF) composition, normal neuroimaging studies and normal neurological exam. It affects predominantly young obese women of childbearing age (1, 2). The most important ophthalmologic hallmark is papilledema (1). Visual acuity may remain normal in the early stages of papilledema. However, untreated it can lead to permanent visual loss.

The most common etiologies for visual loss are optic nerve atrophy and/or secondary maculopathies. Previous authors have reported choroidal neovascularization (CNV) associated to papilledema (3, 4, 5). Anti-angiogenic intravitreal injections have been shown to cause regression of CNV. Two previous reports suggest that bevacizumab may be beneficial in patients with IIH and CNV (6, 7).

We report a patient with papilledema due to IIH that developed peripapillary subretinal neovascular membrane (PSRNVM) with an associated acute subretinal hemorrhage that resolved without adverse effects after treatment with bevacizumab.

Case Report

A 31-year-old white obese female (body mass index: 40.2) was evaluated due to painless progressive visual loss in her left eye (OS) of six days of evolution. Associated symptoms included severe positional headaches, and recurrent visual obscurations. She denied any history of systemic illness, allergies, medications use, head injury, nausea, vomits, fever, malaise, vaccination, or viral illness.

A complete ophthalmologic examination was performed. Best-corrected visual acuity (BCVA) was 20/20 right eye (OD) and 20/400 OS using the Snellen chart. Intraocular pressure using Goldman applanation tonometer was 16 mmHg on both eyes (OU). Ishihara plates were 14/14 on her OD and 0/14 OS. External exam was normal. The patient had full versions and was orthophoric. Pupils were equally round and reactive to light with a relative afferent pupillary defect in her left eye. The anterior segment was within normal limits. Dilated fundus exam revealed marked bilateral optic nerve swelling. A thin peripapillary submacular hemorrhage of less than 300 micrometer in diameter was present in OS. The subretinal hemorrhage spared the fovea. Clinically, subretinal fluid was not associated to the submacular

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hemorrhage. Octopus 301 V5.10 visual fields showed a tubular defect OD and generalized field constriction OS.

Magnetic resonance imaging of the brain with venography were normal. Neurology evaluation showed no focal neurologic deficits. Spinal tap opening pressure was 355 mmHg with normal CSF composition and negative cultures. A diagnosis of IIH was made. Acetazolamide 500 mg orally every 6 hours was started. Three days after the initial clinical presentation, the patient developed acute severe visual loss. BCVA was 20/20 OD and hand motion OS. On fluorescein angiography, a peripapillary subretinal neovascular membrane with associated subfoveal hemorrhage was observed (Figure 1). A 600 micrometer in diameter subfoveal hemorrhage was present in OS with a surrounding 1000 micrometer deep intraretinal hemorrhage. Stratus optical coherence tomography III (OCT) showed intraretinal hyperreflectivity of about 100 micrometers in thickness compatible with intraretinal hemorrhage as depicted in Figure 2A. The patient received a standard intravitreal 30-gauge injection of bevacizumab 1.25mg/0.5 ml.

Six weeks after the initial intervention the patient had BCVA of 20/20 OD and 20/50 OS; a second bevacizumab injection 2.5mg/0.5 ml was performed. Two months after the second dose no leakage was seen in fluorescein angiography and no residual fluid was present by OCT (Figure 2B). One year after treatment the OCT of OS showed a normal foveal thickness and contour as shown in figure 2C. BCVA has continued to be 20/20 OD and 20/40 OS. No systemic or ocular side effects were observed during follow up.

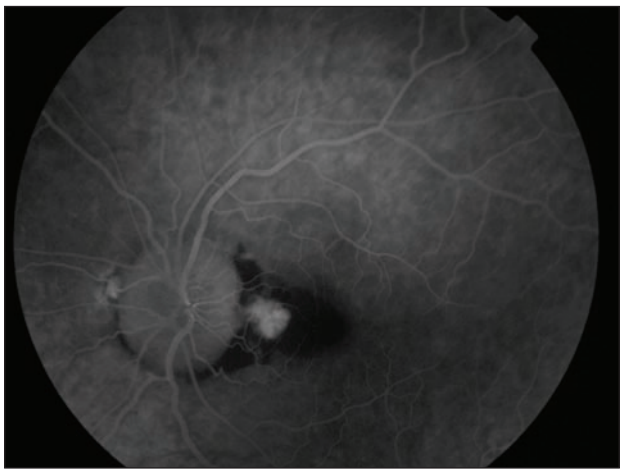

Figure 1. The recirculation phase of fluorescein angiography of the left eye shows a well delineated 400 micron hyperfluorescent lesion in the papillomacular bundle with a surrounding blocking defect.

Discussion

Peripapillary subretinal neovascular membrane is an uncommon complication of IIH (3, 4, 5). Unlike other causes of PSRNVM, the pathogenesis of PSRNVM in IIH is most likely secondary to both disruption of peripapillary tissue resulting in a break in Bruch's membrane and hypoxia created by axonal swelling (3, 4, 8). Peripapillary can be defined as within one disc diameter of the optic nerve. The differential diagnosis of peripapillary choroidal neovascularization in young patients includes optic nerve drussen, peripapillary pseudopodal pigment epithelial and choroidal atrophy, angioid streaks, pattern dystrophy, choroidal osteoma and uveitis.

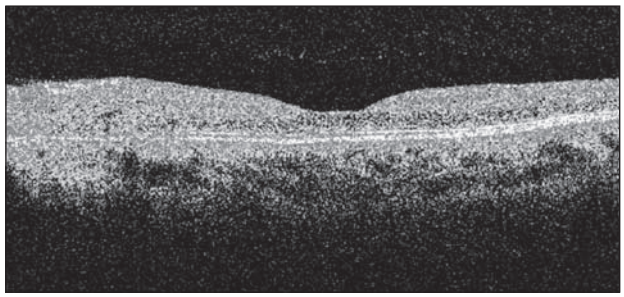

Figure 2A. Pre-treatment OCT image from the left eye showing an intraretinal hyperreflectivity of approximately 100 micrometers in thickness consistent with intraretinal hemorrhage.

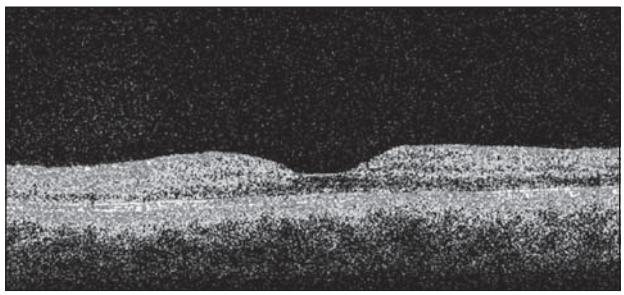

Figure 2B. OCT image from the left eye after second dose of intravitreal bevacizumab showing normal foveolar contour.

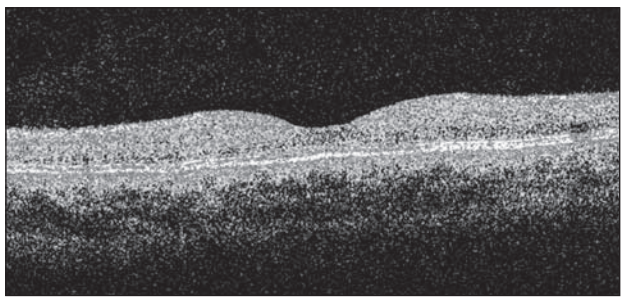

Figure 2C. Follow up OCT image from the left eye one year after treatment showing a normal foveal thickness and contour.

Peripapillary choroidal neovascular membrane is an exceedingly rare complication of chronic papilledema. Fewer than 15 cases have been reported (3, 8-16). The presumed pathogenesis is pressure deformity of the border of Bruch's membrane at the level of the optic nerve head creating a discontinuity of the normal anatomic apposition of the

chorioretinal layers. This anatomic dehiscence, coupled with hypoxia created by axonal swelling, may promote angiogenesis leading to the formation of a neovascular membrane (12). PSRNVM represents a therapeutic challenge. The natural course of PSRNVM in IIH is variable. PSRNVM may resolve, remain stable, or lead to visual loss due to foveal extension of the membrane or through exudation and hemorrhage independent of CSF pressure control (3, 6, 10, 17). Previous treatments regimens have included: observation, submacular surgery, focal laser, neurosurgical shunts, and recently anti-angiogenic agents (3, 6, 7, 8, 17, 18).

All types of laser treatments for subretinal membranes have the disadvantage of destroying neuroretinal tissue along with the pathologic neovascular membranes. Anti-angiogenic intravitreal regimens have been shown in small case series to cause regression of PSRNVM not associated with IIH (6). Two previous reports suggest that intravitreal bevacizumab may be beneficial in patients with IIH and PSRNVM (6, 7). We report a third case where resolution of submacular hemorrhage and an associated PSRNVM resolved after two injections with bevacizumab.

Bevacizumab appears to be an effective option for patients who have PSRNVM due to IIH. Although CNV may have different pathogenic mechanisms, our case report demonstrates encouraging results without adverse ocular or systemic side effects.

Resumen

El propósito de este reporte de caso es documentar el uso de bevacizumab en el tratamiento de una membrana neovascular peripapilar sub-retiniana secundaria a hipertensión intracraneal idiopática. Reportamos el caso de una fémina obesa de 31 años de edad con papiledema crónico asociado a hipertensión intracraneal idiopática, que desarrolla una hemorragia aguda sub-macular secundario a una membrana neovascular coroidal en el ojo izquierdo. Se administraron dos dosis de bevacizumab (1.25mg/0.5ml) intra-vitreo, con seis semanas de diferencia. La agudeza visual en su ojo izquierdo mejoró a 20/40 catorce semanas luego de la primera inyección y estuvo asociado con resolución de la hemorragia en la angiografía. El tratamiento con bevacizumab parece ser una opción efectiva para pacientes que desarrollan membranas neovasculares sub-retinianas asociado a papiledema. La neovascularización coroidal puede tener mecanismos patológicos diferentes, no obstante, nuestro reporte de caso demuestra resultados alentadores sin complicaciones oculares ni sistémicas.

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