CASE REPORT

Papillophlebitis: Treatment of Vision Loss Due To Subretinal Fluid with Intravitreal Ranibizumab

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ABSTRACT

There are no specific treatment protocols for papillophlebitis, which is basically a central retinal vein occlusion (CRVO) occurring in young adults. The present report is that of a 14-year-old girl, who presented with blurred vision in her right eye. Although her visual acuity (VA) was initially 20/20, there were venous engorgements, blurry disc margins, and a substantial collection of subretinal fluid. She was diagnosed with papillophlebitis. When, 2 weeks later, her VA had decreased to 20/200, she was administered intravitreally injected ranibizumab. One week post-injection, her VA had returned to normal (20/20) and the subretinal fluid had diminished markedly. Intravitreal ranibizumab injection appears to be an effective treatment modality for this condition.

Keywords: Anti-VEGF, central retinal vein occlusion, macular oedema, papillophlebitis, ranibizumab

CASE REPORT

A 14-year-old girl presented with blurred vision, which had progressed slowly over a 2-month period, in her right eye. Ophthalmologic examination revealed visual acuity (VA) of 20/20 in both eyes. Colour vision tests, anterior segment examination, and ocular pressures were normal, and no relative afferent pupillary defect (RAPD) was detected. On fundoscopic examination of the right eye, blurry optic disc margins and an elevated disc were seen (Figure 1a). In addition, a large blind spot in the right eye was identified by visual field testing (Figure 1b). At initial presentation, optical coherence tomography (OCT) revealed a moderate level of subretinal fluid (Figure 1c), whereas fundus fluorescein angiography (FFA) demonstrated dilated and tortuous retinal vessels. There were also papillary and peripapillary retinal haemorrhages. Although there were similar findings by FFA in the middle and late phases, there was no macular oedema (ME), which accounts for the normal VA (Figure 1d–f).

Complete blood counts, serum electrolytes, kidney and liver function tests, and thyroid hormone levels were normal. Coagulation tests, including serum

levels of proteins C and S, homocysteine, partial thromboplastin time (PTT), and prothrombin time (PT), were normal. No factor V Leiden mutation was detected. Tests for serum autoantibodies, including antinuclear antibody (ANA), anti-DNA, perinuclear (p) anti-neutrophil cytoplasmic antibody (pANCA), cytoplasmic ANCA (cANCA), anti-SM, anti-Sm/RNP, anti-ss-A, anti-ss-B, anti-scl70, and anti-mitochondrial antibodies, were negative. Electrocardiography (ECG), carotid Doppler ultrasonography, bilateral visual evoked potentials (VEPs), and brain and orbital magnetic resonance imaging (MRI) were also normal. A paediatric haematology consultation was conducted, but there was no evidence of coagulopathy. Transesophageal echocardiography revealed a small atrial septal defect, but it did not require closure. The patient's neurological and paediatric cardiology examinations were also normal.

The patient was followed but not treated, as her VA was normal. However, 2 weeks after her initial presentation, her VA had decreased to 20/125; therefore, she was started on oral prednisolone (1 mg/kg daily) and intravenous ceftriaxone (2 g twice daily). Because of the catastrophic decrease in VA and atypical retinal findings, a single dose (2.3 mg/0.1 mL) of ranibizumab

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FIGURE 1 (a–c) Fundus image, visual field test (with large blind spot), and submacular fluid by OCT at initial examination. (d–f) Image of vessels in early and middle phases, with leakage from the optic disc in the late phase of FFA in initial examination.

was also injected intravitreally. Subretinal fluid was still present 24 hours post-injection (Figure 2b), but on day 17 post-injection, there was almost complete resolution of the excess subretinal fluid. On the patient's third visit (34 days post-injection), her VA had returned to 20/20. On her last visit, which was ~14 months post-injection, her VA was still 20/20 and her macular OCT was completely normal, showing complete resolution of the subretinal fluid collection (Figure 2a–e). There was only minimal change in the appearance of the fundus.

DISCUSSION

Papillophlebitis, a rare condition typically seen in young, healthy adults, is characterised by unilateral optic disc swelling, with no abnormal optic nerve functions. The disorder apparently results from inflammation of retinal veins or, possibly, optic disc capillaries, but its aetiology is still unknown. "Retinal vasculitis" and "benign disc vasculitis" are synonymous terms for "papillophlebitis".¹

As the clinical course of papillophlebitis is typically without permanent visual loss, patients are

usually not treated. However, there are several reports of the benefits of oral or intravenous corticosteroid treatment,^{2,3} but these results are unverified.^{2,3}

Since the appearance of the fundus in papillophlebitis is similar to that of central retinal vein occlusion (CRVO), the term papillophlebitis—instead of CRVO—has been used for young patients.^{1,2} Although the aetiopathogenesis of the condition is unclear, central retinal vein inflammation at the optic disc has been suggested as being the cause, but the source of this inflammation is unknown. Perhaps inflammatory optic neuritis or vasculitis is the origin.⁴ However, this inflammation may result in disc oedema and/or venous occlusion.⁴

Although spontaneous improvement of papillophlebitis is common, the condition is not always benign. Up to 30% of patients with papillophlebitis develop ischaemic venous occlusion.⁴ Final VAs may decrease to 20/200 or worse. Furthermore, neovascular glaucoma may develop.^{4,5} Consequently, periodic check-ups are important for papillophlebitis patients, although most are not treated because of the high prevalence of spontaneous improvement. However, significant ME with decreased VA is an indication to

FIGURE 2 (a) Submacular fluid is present by OCT; VA was 20/20 by Snellen at initial examination. (b) Appearance at day 1 post-injection after injection; 2 weeks had elapsed between initial OCT and OCT shown in figure. (c–d) Submacular fluid had nearly completely disappeared by days 17 and 34 post-injection. VAs were 20/20 by Snellen at both visits. (e) Macular OCT 14 months post-injection; VA was 20/20.

initiate treatment in order to avoid irreversible macular damage.

Corticosteroids are the conventional treatment for papillophlebitis, albeit their benefits are unconfirmed.^{2,3} Antibiotics are also used if infection is indicated as being the source of inflammation. Furthermore, anti-vascular endothelial growth factor (VEGF) has been used to treat the ME of CRVO.^{6–10}

Since spontaneous recovery from papillophlebitis is also very common, treatment should be considered only when there is the possibility of macular damage,

which would reduce VA. However, such cases are rare. Taking into account the uncertainty regarding the effectiveness of conventional treatments, it is clear that new treatment options are needed for papillophlebitis patients. Nonetheless, it is vital to ensure that there are sufficient indications for invasive treatments, e.g., intravitreal injections. In the case presented here, it seemed clear that macular function and VA would be permanently damaged; thus, we applied intravitreal ranibizumab in concert with conventional treatment methods.

Before deciding on treatment(s), it is necessary to consider differential diagnoses, which, for papillophlebitis, include unilateral papilloedema, diabetic papillopathy, ischaemic optic neuropathy, papillitis, and orbital compressive lesions.² In our case, these potential diagnoses were reduced to papillophlebitis and CRVO. The patient was young, with no defined risk factor for retinal ischaemia. Her initial VA was normal, and she had an enlarged blind spot, neither of which is typical of CRVO. In addition, the peripapillary distribution of retinal exudates gave the impression of papillophlebitis, not CRVO. Based on the appearance of the retina, our final diagnosis was papillophlebitis. We administered intravitreal ranibizumab together with conventional treatments, including oral steroids and antibiotics, since papillophlebitis is considered by some to be a subtype of CRVO.^{1,2} Thus, based on the similarity of their clinical aspects and origins, we reasoned that application of intravitreal ranibizumab, which is effective in treating CRVO, would be beneficial in treating papillophlebitis.

Our patient showed a rapid improvement in VA, with resolution of the subretinal fluid within 2 weeks post-injection. We attributed this rapid improvement to the addition of the intravitreal ranibizumab injection, as the usual course of the disease or the response to steroids is not typically so fast. We also suggest that anti-VEGFs are beneficial for treating papillophlebitis when VA is decreased due to subretinal fluid.

Because cases of papillophlebitis cases are so rare and usually improve without treatment, it is unlikely that a sufficient number of patients could be accumulated within a reasonable time, thus obviating the possibility of conducting clinical studies. We emphasise that although intravitreal ranibizumab injection is not a routinely recommended treatment for papillophlebitis, it should be considered as a potential therapeutic option in selected cases. The case

presented here is also unique in the use of intravitreal ranibizumab in the paediatric age group.

Declaration of interest: The authors report no conflicts of interest. The authors alone are responsible for the content and writing of the paper.

Note: Figures 1 and 2 of this article are available in colour online at <http://informahealthcare.com/oph>.

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