Case report

POEMS syndrome as an uncommon cause of papilledema

Carlos Mario Franco,[1] Kepa Balparda,[2] Ana María Díaz,[3]
Daniel Jiménez,[3] Ana Paulina Pamplona[3]
[1]Department of Ophthalmology, Hospital Pablo Tobón Uribe. Medellín, Colombia.
[2]Department of Ophthalmology, Universidad Pontificia Bolivariana. Medellín, Colombia.
[3]School of Medicine, Universidad Pontificia Bolivariana. Medellín, Colombia.

Abstract

Background: Polyneuropathy, organomegaly, endocrinopathy, monoclonal gammopathy, and skin changes (POEMS) syndrome is an uncommon condition related to a paraneoplastic syndrome secondary to an underlying plasma cell disorder. Among the myriad of manifestations of the disease, ocular signs and symptoms are relatively prevalent, affecting about half of all patients with the disease. **Objective**: To report the ocular manifestations of POEMS syndrome. **Case**: A 47-year-old lady diagnosed to have POEMS syndrome presented with painless progressive visual diminution. Her color vision was impaired. There was bilateral papilloedema. **Conclusion**: POEMS syndrome should be considered among the differential diagnoses of all patients with a bilateral papilledema in which no other cause can be readily elucidated.

Keywords: POEMS syndrome, papilledema, vision disorders

Introduction

POEMS syndrome is also known as Takatsuki Disease or Crow-Fukase Syndrome (Yokokawa et al., 2013). It is a fairly rare paraneoplastic syndrome (Nasu et al, 2012), with a poorly understood physiopathology, essentially due to an underlying plasma cell disorder. Coined for the first time by Bardwick *et al* in 1980, the 'POEMS' acronym refers to a constellation of elements encompassing the most representative, although not all, of the manifestations related to this disease process (*P*olyneuropathy, *O*rganomegaly, *E*ndocrinopathy, *M*onoclonal plasma cell disorder and *S*kin changes). Recent research has also emphasized the common occurrence of other manifestations, such as sclerotic bone lesions, extravascular volume overload, thromobocytosis, thrombophilia and Castleman Disease (Dispenzieri, 2012), all which can be very useful in pursuing a definitive diagnosis.

Regarding ocular manifestations, a number of authors have described these to be present in about half of all patients with POEMS syndrome. In a recently published paper, Kaushik *et al* (2011) evaluated information of 33 patients with POEMS syndrome who had undergone at least one ophthalmologic examination during the past ten years. These authors concluded that 66.7 % of all individuals had at least one ocular sign or symptom, the most common of them being optic disc edema, in 51.1 % of all the patients, most of them bilateral (94.1 %). Other ocular findings included ocular pain, blurred vision and diplopia.

The following paper describes the case of a female patient diagnosed to have POEMS

Address for correspondence
Kepa Balparda, MD
Department of Ophthalmology
Universidad Pontificia Bolivariana
Carrera 72A 78B – 50, Medellín, Colombia
Email: kb@kepabalparda.com

syndrome. The authors consider the case to be interesting for two main reasons. The first, is that this is, to the best of authors' knowledge, the first case of POEMS syndrome in a Colombian patient to be described in literature. The second is to underline the fact that the papilledema is a relatively common manifestation in patients with the POEMS syndrome and that this disease has to be considered as a plausible differential diagnosis when no other more common etiology is readily apparent.

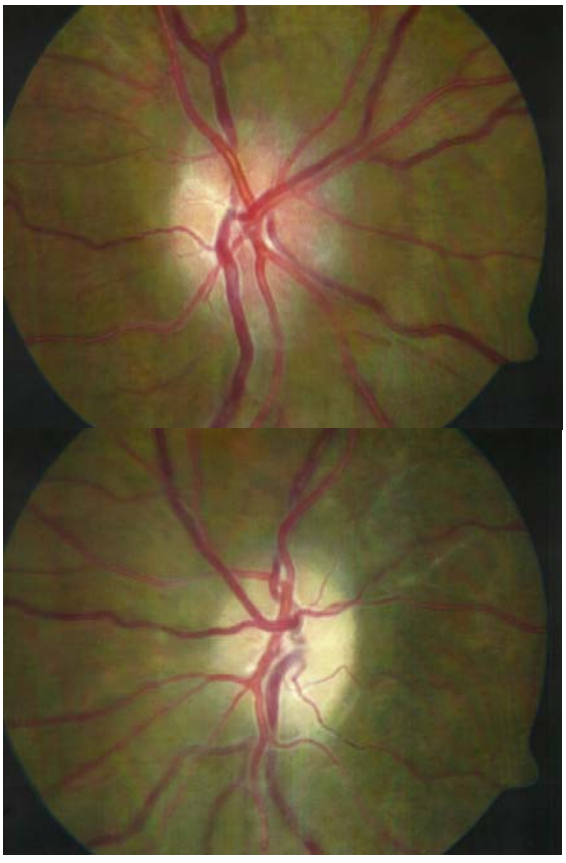
Clinical case

A 47-year-old female patient, born and residing in the rural Colombian town of Chocó and with a *de novo* diagnosis of POEMS syndrome was referred to the Ophthalmology Department of our hospital because she complained of a six-month long painless but progressive loss of vision in both eyes, with no other ocular symptoms.

Her systemic clinical picture included many of the POEMS syndrome manifestations, including Castleman Disease, a severe sensorimotor polyneuropathy which had made her wheelchair-bound, hepatomegaly, numerous areas of skin hyperpigmentation, pulmonary hypertension and hypogonadism. A lambda monoclonal gammopathy had already been confirmed as well. At the time of presentation she was on her fifth chemotherapy cycle with cyclophosphamide (Cytoxan®) and dexamethasone (Decadron®). She was also on medical treatment with furosemide (Lasix®), amlodipine (Norvasc®), carvedilol (Coreg®), pregabalin (Lyrica®) and levothyroxine (Synthroid®). Her current hospitalization was due to a massive ascites and pleural effusion.

On physical examination, she was found to be weak, cachectic, with a visual acuity of 20/70 and 20/1000 in her right and left eyes respectively, none of which improved with the use of a pinhole. Dilated-pupil evaluation revealed an edematous optic disc in both eyes, the left optic disc being also a little pale. The remainder of the physical examination was normal.

The patient was examined again two months later when her vision had improved only slightly. Her visual acuity was 20/150 and 20/400 in her right and left eye respectively, with no improvement using a pinhole. On the Ishiara test, she failed in 10 out of the 12 plates in her right eye and in 11 out of 12 in the left. The left eye desaturated red color by 75 % compared to the color perceived with the contralateral eye. There was no relative afferent pupillary defect, although both pupils seemed to constrict slowly and mildly on both direct illumination (1/4) and near fixation. Ocular movements were normal. Fundus evaluation remained unchanged (**Fig. 1**). During the hospitalization, the patient was found to have a normal intracranial pressure.



The patient was eventually treated by different specialties at our hospital and when her pleural effusion and ascites resolved adequately, she was discharged.

Discussion

The pathogenesis of POEMS syndrome is complex and is yet to be completely elucidated. Nevertheless, studies do seem to point out a high cytokine concentration as one of the key points in the development of the disease. Given the angiogenic changes observed in many tissues, some authors have postulated that there may be an important role in the action of the vascular endothelial growth factor (VEGF). Nevertheless, this is obviously not the only cytokine involved and management with an anti-VEGF monoclonal antibody (bevacizumab) has failed to elicit a response in these patients (Kanai et al, 2007). Interleukin 1ß, interleukin-6 and tumor necrosis factor alpha (TNFa) have also been implicated, but as their serum levels do not seem to correlate well with the disease activity, their specific role in the pathogenesis and manifestations of the disease is still obscure.

This paper is specially focused on the studied patient's ocular findings, which included bilateral papilledema, blurry vision and color-vision disturbances. Not many papers have specifically addressed ocular findings in this type of patients, although recent literature suggests more than half of the patients have some sort of ocular manifestations. The largest of such studies is the one by Kaushik *et al* (2011), which not only showed a high prevalence of chronic bilateral optic disc edema, but also described that 73 % of such patients have a complaint of blurred vision, with only a small fraction having a completely asymptomatic edema. Wiaux *et al* (2007) have also examined the relationship between POEMS syndrome and ocular manifestations with bilateral papilledema in all three of their studied subjects, with only one of them having a decreased visual acuity, probably in relation to a macular edema confirmed by angiography. In two of these patients, an elevated intracranial pressure was confirmed (30 and 39 cm H_2O). The patient we report in this paper does seem to comply with most of this description, especially in the sense that her optic dis edema was bilateral, with a bilateral (although asymmetric) diminished visual acuity which had not resolved completely during the time the patient was observed. Clinically and on retinal photographs, no signs of macular alterations could be found, although no fluorescein angiography could be performed on the patient due to external causes.

The cause for optic disc edema in the POEMS syndrome remains contested. Intracranial hypertension has been related to papilledema by a number of authors (Wiaux et al, 2007) but lumbar puncture discarded this finding in our patient. Other plausible causes for the optic disc edema may include vasculitis with secondary leakage, infiltration of the nerve, or increased VEGF levels with secondary neovascularization which may also be related to leakage.

The authors are well aware of the main limiting factor in this paper as being the fact that no fluorescein angiography could be performed; nevertheless, the main reason for reporting the case was the occurrence of bilateral optic disc edema which has been well documented in the fundus photograph. The diminished vision may have been caused by bilateral macular edema, as has been described previously (Chong et al., 2007), but this is fairly rare and blurred vision has also been described in patients in which macular integrity was objectivized and papilledema was the only finding. Also, clinical evaluation and fundus photographs showed no signs to suggest macular alterations.

Conclusions

POEMS syndrome should be considered among the differential diagnoses of patients with optic disc edema, especially if it is bilateral and

coupled with a diminished visual acuity. Upon encountering such a manifestation in a patient with no other apparent cause, the ophthalmologist should think of the POEMS syndrome.

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