Case Report

Fast resolution of bilateral optic neuritis secondary to multiple sclerosis after treatment with glatiramer acetate

Abstract

Purpose: To report a patient with bilateral retro-bulbar optic neuritis (ON) secondary to multiple sclerosis (MS) who responded speedily to glatiramer acetate (GA) subcutaneous injections.

Methods: Case report of a 34-year-old patient with multiple sclerosis that presented with bilateral optic neuritis, confirmed clinically and with visual fields. Concomitantly she had active neurological systemic symptoms that prompted the start of GA subcutaneously.

Results: Clinical examination with pupillary reflexes, Ishihara test and visual fields pre and post injections revealed a quick recovery of the optic nerve function. Her neurological systemic symptoms improved significantly as well.

Conclusion: ON secondary to MS is a frequent diagnosis in neuro-ophthalmology and it can be invalidating and distressing in an already disabled patient. GA is an immuno-modulator currently approved for use in patients with MS. We present a case of bilateral retro-bulbar ON that responded to the use of GA.

Keywords: multiple sclerosis, retro-bulbar, optic neuritis, glatiramer acetate

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Abbreviations: ON, optic neuritis; MS, multiple sclerosis; GA, glatiramer acetate; VA, visual acuity; RAPD, relative afferent pupillary defect; ONTT, on treatment trial; NMO, neuromyelitis optica

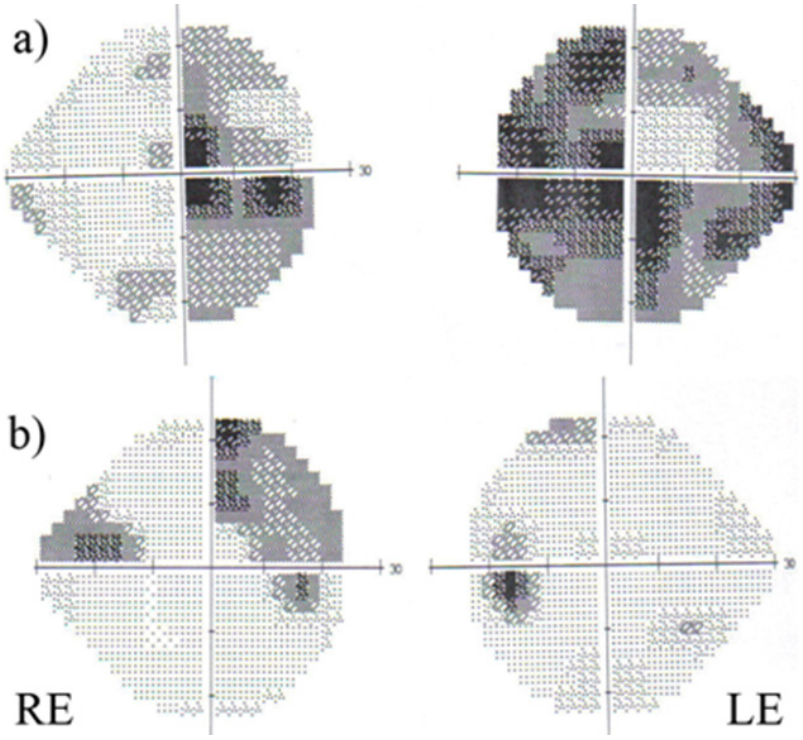
Introduction

Multiple sclerosis (MS) is an autoimmune inflammatory central nervous system disease that can manifest with acute optic neuritis (ON). Up to 50% of patients with MS will develop an episode of ON and in 20 to 30% it is the presenting sign of the disease.[1] Retro-bulbar ON is an inflammation of the optic nerve with no obvious optic disc swelling and accounts for two thirds of the cases in MS.[2] Glatiramer acetate is an immuno-modulator currently used to treat MS. It is a polymer composed of four amino acids found in the basic structure of the myelin protein with an unknown mechanism of action. The FDA has approved it for treatment of MS, as it has demonstrated effectiveness in reducing the frequency of relapses of the disease.[3] No clinical trials or cases of MS related ON treated with glatiramer acetate (GA) have been reported.

Methods

We report a case of bilateral retro-bulbar optic neuritis in a 34-year-old woman with a twelve-year history of relapsing MS that exhibited a favourable response after subcutaneous injections of GA. The patient was referred with a three-week history of bilateral visual loss. On presentation, Snellen visual acuity (VA) was 6/9 in the right eye and 6/60 in the left eye. There was a left relative afferent pupillary defect (RAPD) and reduced Ishihara test (10/17 right eye, 6/17 left eye). Extra-ocular movements were full. Anterior segment examination and dilated fundoscopy were unremarkable. Visual fields tests showed right central scotoma and left gross visual field defect (Figure 1a). The diagnosis of retro-bulbar optic neuritis was made, as the clinical appearance of both optic discs was unremarkable.

In addition to the ophthalmic manifestations, the patient also exhibited various MS related neurological symptoms (muscular spasms, severe paresthesia and limb weakness) and her neurologist decided to start GA (Copaxone[tm]) subcutaneous injections 40 mg three times weekly. The patient reported subjective improvement and three weeks after treatment initiation, her optic neuritis as well as systemic symptoms had responded significantly. VA improved to 6/6 right eye and 6/9 left eye, Ishihara test was normalized (17/17) in both eyes and RAPD was no longer present. Visual fields at this point are shown in (Figure 1b).



Figures 1a&1b Humphrey 24/2 threshold visual fields before (1a) and after (1b) the use of glatiramer acetate in a patient with longstanding multiple sclerosis and bilateral optic neuritis.

Discussion

Acute demyelinating ON associated to MS has been well documented in the literature. We present a case of retro-bulbar optic neuritis in a patient with chronic and severe neurological manifestations due to MS who presented with bilateral simultaneous asymmetric optic nerve involvement. The patient had a longstanding diagnosis of relapsing MS on the basis of systemic neurological features and imaging many years in advance. This was her primary incidence of ON.

The purposefulness of treatment in cases of ON with or without MS has been extensively studied. The ON Treatment Trial (ONTT) is perhaps the pinnacle of such studies since it provides valuable insights into the natural history and treatment of the disease.[4] One of the main conclusions of the ONTT is that visual function in ON, improves spontaneously over weeks and within 12 months 93% of the cases has recovered to a visual acuity of 6/12 or better. In addition, treatment with corticosteroids showed limited benefit by improving the speed of recovery only, with no impact on long-term visual outcomes.

The ONTT excluded cases with bilateral involvement and due to its prospective nature did not describe the effect of treatment and natural history of longstanding MS cases presenting with bilateral ON. Certainly, the observed improvement in our case could be attributed to spontaneous recovery. Nevertheless, the temporal association between treatment initiation and optic neuritis improvement as well as the significant effect on the systemic neurologic symptoms, led us to believe that the recovery experienced in this case could be related to the use of GA. Unfortunately, this cannot be confirmed and constitutes a weakness in our report, however it might encourage further reports and/or case series in a time when GA is more widely used due to its official approval and excellent tolerance reported.

A similar case with relapsing neuromyelitis optica (NMO) has been reported previously in the literature.[5] This case was similar to ours in terms of exhibiting a quick response to the GA treatment given. It is different to our report in that the previous history of systemic involvement experienced by the patient was longer in our case however the speed of ON recovery and visual improvement is comparable. Another similar case with NMO responsive to GA was reported in 2007.[6] A meta-analysis recently published in the German literature,[7] seems to confirm the fact that treating optic neuritis with GA, as an isolated syndrome in MS, has positive results. A third of the MS cases analyzed in this article have optic neuritis. The authors concluded that GA not only reduces the number of clinical relapses, but also seems to act as an immuno-prophylactic agent.

In severe cases like the one described by ourselves, with MS related disability and bilateral ON causing significant visual impairment, new therapeutic options become of great importance especially if they have the potential to modify the natural course of the disease. At present, there is no treatment for established poor outcome demyelinating ON and the role of GA as a disease-modifying drug is yet to be established.

Acknowledgments

None.

Ethical consent

None.

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Conflicts of interest

The author declares there are no conflicts of interest.

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