

Development of Glaucoma in the Course of Interferon Alpha Therapy for Chronic Hepatitis B

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Previous reported ocular complications of interferon alpha administration are extremely rare. These include oculomotor palsy, corneal allograft rejection, retinal hemorrhage and cotton wool patches. A 15-year-old boy with chronic hepatitis B was treated with interferon alpha for six months, and then developed glaucoma. After the interferon therapy had been discontinued the glaucoma improved. Accordingly, we report a case of glaucoma development during the course of interferon alpha therapy for chronic hepatitis B.

Key Words: Chronic hepatitis B, interferon alpha, glaucoma

INTRODUCTION

Interferon alpha is widely used today to treat hepatitis and malignant diseases. Adverse reactions to interferon alpha are generally mild to moderate and are reversible on the cessation of therapy. Most side effects are dose related. Adverse reactions to interferon alpha include a flu-like syndrome (fever, chilling, myalgia, headache and fatigue), neutropenia, and thrombocytopenia. Other uncommon side effects include mild alopecia, impaired concentration, changes in mood, depression, and certain autoimmune disorders ((e.g.) thyroiditis, systemic thrombocytopenia, pernicious anemia, and systemic polyarthropathy).¹

Previously reported ocular complications of

interferon alpha administration are extremely rare, and include, oculomotor nerve paralysis,² hypertrichosis,³ acute corneal allograft rejection,⁴ and papilledema.⁵ In this report, we describe the case of a 15-year-old boy with known chronic hepatitis B who developed glaucoma after interferon alpha therapy. To our knowledge, this is the first report of glaucoma development of during the course of interferon alpha therapy for chronic hepatitis B.

CASE REPORT

A 15-year-old boy with chronic hepatitis B was admitted to our hospital for interferon alpha 2a therapy. Laboratory evaluation upon admission showed positive results for HBsAg, HBeAg and HBV DNA. The level of serum alanine aminotransferase (ALT) was elevated to 75 IU/L, and the level of serum aspartate aminotransferase (AST) to 172 IU/L. He had been treated with 6×10^6 units of interferon alpha subcutaneously three times a week for six months, and had become HBV DNA-negative with serum levels of aminotransferase reduced to ALT 35 IU/L, and AST 80 IU/L.

Three months after the interferon therapy ended, HBV DNA increased. Interferon therapy was reinitiated after obtaining parental consent. In three months, he developed a sudden decrease in vision which was accompanied by pain in both eyeballs. At that time, visual acuities with glasses

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were 20/30 (OU). The intraocular pressures were 46 mmHg (OD) and 47 mmHg (OS) by Goldman applanation tonometry. The cornea was edematous but the lens, vitreous and retina were normal. Optic disc notching and decreased neuroretinal rim were noticed on the inferior temporal disc area (OU). The cup/disc (C/D) ratio was 0.6 (OU). Visual field examination showed field defects of the superior nasal area (OD) and arcuate scotoma (OS) (Fig. 1). Gonioscopic examination revealed open angle and no specific findings in the anterior chamber angle (OU). He had neither family history nor past history of glaucoma, nor a history

of using eye-drops.

After urgent medical treatment for high intraocular pressure with mannitol, oral acetazolamide, and beta blocker eye-drops, the intraocular pressure was reduced to 23 mmHg (OU). Interferon therapy was discontinued, and visual acuity improved to 20/20 with -sph 1.50 glasses (OU). One month later, intraocular pressures were 12 mmHg (OD) and 13 mmHg (OS). Intraocular pressures have now been maintained within normal limits, without any eye-drops for a year, and the last optic disc and visual field examinations showed no further changes.

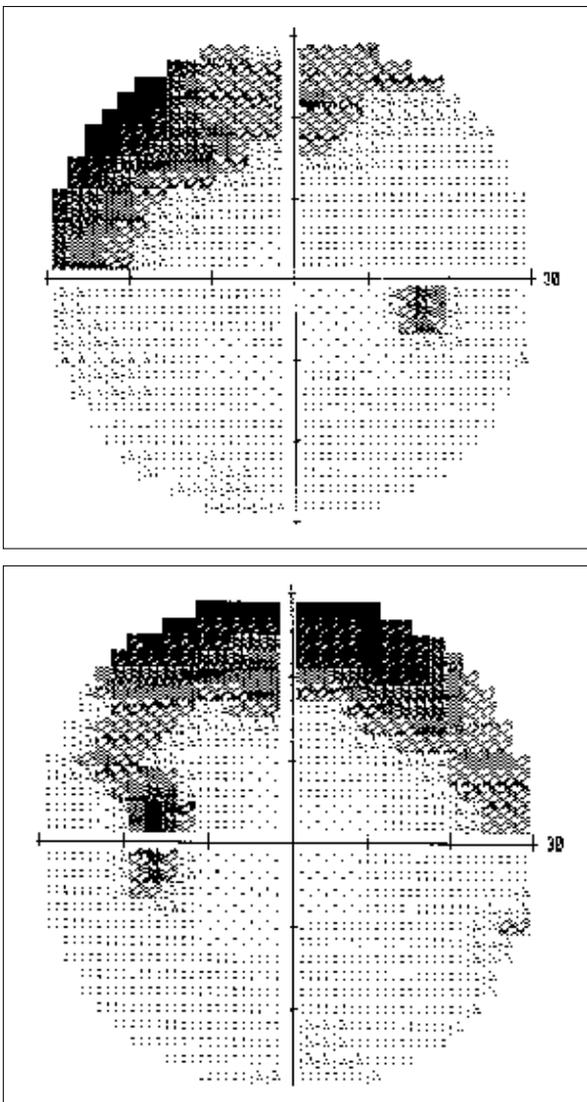


Fig. 1. Visual field defects of the superior nasal area (OD) and arcuate scotoma (OS) were noticed during the course of interferon alpha treatment.

DISCUSSION

Interferon inhibits angiogenesis *in vitro* and *in vivo*.⁶ *In vivo*, the drug inhibits the proliferation⁷ and migration of vascular endothelial cells.⁸ The use of interferon alpha as an antiangiogenic agent to treat choroidal neovascularization has been recently reported,⁹ but these results have not been validated with a prospective, randomized, controlled clinical trial.

In 1994, Ayaki reported a case of neovascular glaucoma that occurred two months after the initiation of interferon therapy.¹⁰ He observed that the left eye of the patient showed severe ciliary injection, hyphema occupied the bottom half of the anterior chamber, and the intraocular pressure was 40 mmHg. The anterior segment of the right eye showed neovascularization at the anterior chamber angle. After the discontinuation of interferon therapy, the lesions and intraocular pressure returned to normal.

In our case, we did not find any evidence of neovascular glaucoma. The mechanisms by which interferon therapy might lead to glaucoma remain unclear. The only evidence we have is that glaucoma occurred after the initiation of interferon alpha therapy and disappeared after the drug therapy was discontinued. Further studies are needed to confirm these findings.

We report upon a patient who developed open angle glaucoma during a course of treatment with interferon alpha for chronic hepatitis B, which disappeared when therapy was stopped.

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