CASE REPORTS

Bilateral Optic Neuropathy Revealing Chronic Hepatitis B Infection: A Report of A Rare Case

Anil Korkmaz^a, Dilek Top Karti^b, Yaprak Ozum Unsal Bilgin^b, Omer Karti^c, and Nese Celebisoy^d

^aDepartment of Ophthalmology, Bingöl State Hospital, Bingöl, Turkey; ^bDepartment of Neurology, İzmir Bozyaka Training and Research Hospital, İzmir, Turkey; ^cDepartment of Ophthalmology, İzmir Democracy University, İzmir, Turkey; ^dDepartment of Neurology, Ege University, İzmir, Turkey

ABSTRACT

Hepatitis B virus (HBV) infection is a major public health problem. Liver diseases such as cirrhosis and hepatocellular carcinoma are the main causes of mortality and morbidity associated with this viral infection. Ocular manifestations may also arise during the course of HBV infection. We herein present a 44-year-old male with bilateral optic neuropathy revealing chronic HBV infection.

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Introduction

Hepatitis B virus (HBV) infection, a significant global health issue, leads to liver diseases that may result in mortality and morbidity because of complications such as cirrhosis and hepatocellular carcinoma.^{1,2} The routes of transmission for HBV consist of sexual, parenteral/percutaneous (intravenous drug use, blood transfusions, dialysis, acupuncture, tattoos, etc.) and perinatal transmission.³ Uveitis,^{4,5} pupil-sparing third nerve paresis,⁶ and optic neuritis^{7–11} have been reported as ocular manifestations associated with HBV infection. Herein, we report a rare case presenting with blurred vision due to bilateral optic neuropathy (ON) as the initial manifestation of chronic HBV infection.

Case report

A 44-year-old male patient presented with a 10 day history of mild blurred vision in both eyes. His past medical history did not reveal any pre-existing systemic diseases (diabetes mellitus, hypertension, hyperlipidaemia, etc.), chronic drug usage, or smoking. On systemic examination his body temperature (36.5°C), blood pressure (130/80 mmHg), and pulse (76 beats/min) were normal. On neuro-ophthalmological examination his visual acuity was

0.9 in the right eye and 0.7 in the left eye by the Snellen chart without any correction. His colour vision, pupillary reactions, and extraocular movements were normal. Anterior segment examination and intraocular pressure measurements were unremarkable. Fundus examination revealed optic disc oedema with splinter haemorrhages in the adjacent nerve fibre layers in both eyes (Figure 1). There was no vitreous haze and the peripheral retinae were normal. Visual field tests revealed a superior altitudinal defect in the right eye and peripheral concentric constriction in the left eye (Figure 2). Detailed radiological examination including a chest radiograph, chest computed tomography, magnetic resonance (MR) imaging (MRI) of the brain and orbits with and without contrast, and MR venography gave normal results. The cerebrospinal fluid (CSF) opening pressure by lumbar puncture was 19 cmCSF with normal components. Comprehensive laboratory tests were performed. A complete blood cell count and blood biochemistry values were within normal limits. High values for C-reactive protein (13.4 mg/L) and erythrocyte sedimentation rate (50 mm/h) were detected. An antinuclear antibody (ANA) test was positive and a rheumatoid factor (RF) level was 75 IU/ml. The HBsAg and anti-Hbc tests were positive together with an increased HBV-DNA level, but an anti-HBs test was negative.

Figure 1. Colour fundus photographs of the right eye (a) and left eye (b) depicting bilateral optic disc oedema with splinter haemorrhages in adjacent nerve fibre layers.

Figure 2. Visual field tests showing peripheral concentric constriction in the left eye (a) and an altitudinal defect in the right eye (b).

The rest of the infective, autoimmune screen as well as coagulation profile and thrombophilia screen was negative. The patient was consulted by an infectious diseases specialist and was diagnosed with chronic HBV infection, which was most likely responsible for the patient's bilateral ON. Oral entecavir therapy and a liver biopsy were recommended. The patient was treated with pulsed steroid therapy for 3 days, which was followed by oral steroid therapy (1 mg/kg/daily). Oral entecavir was started concurrently with the steroid therapy and then the steroid dosage was gradually tapered. After steroid and antiviral treatment, his symptoms improved slowly. One month after treatment, the optic disc oedema had almost completely resolved (**Figure 3**). His visual acuity was

1.0 in each eye at the final visit, but no improvement in the visual field was observed.

Discussion

Various extrahepatic manifestations including systemic vasculitis, arthritis, and glomerulonephritis may accompany HBV infection as autoimmune reactions are commonly seen in this infection.⁹ More rarely, optic nerve involvement may also arise in HBV infection. There are only few studies in the literature demonstrating the relationship between HBV infection and ON.^{7–12} High levels of circulating immune complex (HBV antigen-antibodies), immune complex deposition in tissues,

Figure 3. Fundus photographs of the right (a) and left eyes (b) one month after the initiation of systemic steroid and entecavir therapy. The optic disc oedema had resolved almost completely in both eyes.

subsequent complement cascade activation and following immune complex-mediated toxicity are suggested to be responsible for the pathogenesis of HBV-related ON.^{9,11}

Galli et al.¹¹ reported a 33-year-old female with retrobulbar optic neuritis secondary to acute HBV infection. In a recent case report conducted by Curras-Martin et al.,⁹ retrobulbar optic neuritis was defined in a patient with a chronic HBV flare. Apart from retrobulbar optic neuritis, bilateral papillitis associated with acute HBV infection has also been reported by Farthing et al.¹²

As all possible aetiologies were excluded by appropriate radiological and laboratory investigations, we considered that chronic HBV infection was responsible for the bilateral ON in our patient. Our case had no rheumatological signs or symptoms (arthritis, arthralgia, and morning stiffness, etc.) in his anamnesis. Therefore, the ANA positivity and increased RF levels in the present case might be related to HBV infection. Several studies have reported the false positivity of auto-antibodies related to chronic HBV infection.¹³ The incidence of false RF positivity is higher in patients with HBV infection compared with the general population. In a study conducted by Dalkılıç et al.,¹⁴ RF positivity was reported in approximately one-fourth of patients with HBV infection. Lee et al.¹⁵ reported RF positivity in 42.7% of chronic HBV patients who had no articular signs. Similar false-positivity has been defined for ANA, which may be positive at low-level titres in patients with chronic HBV infection.¹³

In previous case reports, systemic steroids have been used alone or in combination with antiviral drugs to treat HBV infection-related optic neuritis.^{9,10} Similarly, we used systemic steroids for the ON in our patient. However, we also used concomitant oral entecavir to prevent steroid-related viral activation. No complications were observed during the treatment.

In conclusion, chronic HBV infection may be a rare cause of ON. However, other causes of ON should be excluded before a diagnosis of HBV-related ON is made. Steroids combined with antiviral therapy may be a good option in the treatment of appropriate cases.

Declaration of interest statement

The authors declare that they have no conflict of interest.

Patient consent and ethics statement

The authors obtained consent from the patient to publish the case.

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