

Multiple Sclerosis Like Condition in a Patient of Hepatitis C after Treatment with Interferon Alpha: A Case Report

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ABSTRACT

Hepatitis C virus affects millions of people around the world. The primary therapy comprises of interferon alpha and ribavirin. The most common side effects of this treatment include flu like symptoms and psychiatric issues. One of the rare complications of the combined therapy is the development of demyelinating lesions in the central nervous system. Our case report presents a 35-year-old man who was a known case of Hepatitis C presenting to us with altered level of consciousness and decreased vision. He had been treated as per the standard therapy for Hepatitis C infection with interferon alpha and ribavirin. During the course of this therapy, he developed significant loss of vision. This was in fact due to serious and rare complication of the treatment which was demonstrated on the MRI as demyelinating lesions in the deep periventricular white matter bilaterally. Visual Evoked Potential study was performed which concluded bilateral dysfunction of the optic pathway. The treatment of Hepatitis C with interferon alpha and ribavirin may present with a wide array of adverse effects which includes a rare complication of central nervous system demyelination as well. Research suggests that early treatment of Multiple Sclerosis (MS) is beneficial in the long run with a better prognosis and minimal changes on MRI of the patient. Therefore this complication of the treatment should be kept in mind as one of the main differential diagnosis. By finding the extent of the inflammation, and consequently doing an MRI alongside a lumbar puncture, can serve to diagnose a rare condition mimicking multiple sclerosis while treating with interferon alpha.

CASE REPORT

A 35-year-old man, known case of hepatitis C, presented with altered level of consciousness and decreased vision. He was vitally stable with Glasgow Coma Scale (GCS) score of 9/15 and the general physical examination revealing anemia, jaundice and flapping tremors. Neurological examination revealed increased tone, hyper-reflexia in the limbs with clonus and up going plantars bilaterally. Pupils were normal and reactive to light. The rest of the examinations were unremarkable. Blood reports and biochemical analysis were normal except liver function test (LFT) which showed a total bilirubin level of 2.06mg/dl. Ultrasound scan of the abdomen showed coarse echo texture of the liver.

The patient was diagnosed as a case of hepatitis C in 2010. Interferon therapy was started at a public sector hospital as a treatment for the infection by HCV. During the course of the treatment, patient experienced significant loss of vision which persisted even after the therapy was stopped. Visual Evoked Potential (VEP) was performed and suggestive of bilateral optic pathway dysfunction. Nerve Conduction studies proved to be normal. Magnetic Resonance

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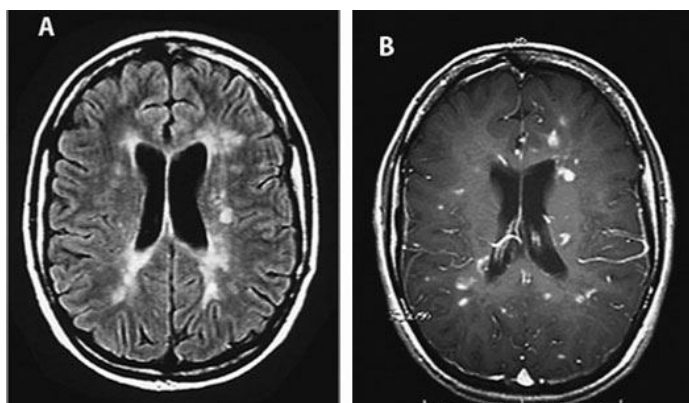
Imaging (MRI) scan of the brain was done which showed confluent areas of abnormal signal intensity changes in the deep periventricular white matter bilaterally which were hyperintense on T2 weighted images and FLAIR images and iso-intense on T1 weighted images as shown in [Table/Fig-1a&b] (attached at the end of the report). Magnetic Resonance Angiography (MRA) of the brain was normal. The patient then underwent a lumbar puncture which showed the presence of oligoclonal bands (IgG) in the CSF, mimicking a multiple sclerosis like condition.

During the course of his stay in our hospital, he was treated for hepatic encephalopathy and responded. The patient was also put on injectable steroids. This was however stopped due to the worsening of liver enzymes.

DISCUSSION

Hepatitis C virus (HCV) is amongst the noteworthy causes of chronic liver diseases including hepatocellular carcinoma and end stage liver disease linked to cirrhosis. Around 3% of the world's population, which comprises 170 million people, is affected by HCV [1]. 10 million people in Pakistan are assumed to have infection from HCV [2]. The combination of interferon (IFN) alpha (α) and ribavirin have been effectively used for the treatment of chronic hepatitis infection [3]. The curative benefit is thought to result from activation from the natural killer and CD8+ T cells. We report a patient with chronic HCV infection who developed multiple sclerosis (MS) like condition after receiving interferon therapy as a part of the treatment for HCV infection. To the best of our knowledge, this is the first case of its kind for our region to be reported.

The therapy is not without adverse effects including serious debilitating neurological complaints. The common side effects of interferons include flu-like symptoms and psychiatric complaints [4,5]. Less common side effects include cytopenias, reversible loss of hair, hearing loss and occurrence and exacerbation of different autoimmune diseases. There have been rare instances where hepatitis C is associated with a demyelinating condition like multiple



[Table/Fig-1a&b]: MRI of the brain. FLAIR Axial images showing hyper intense signal abnormality in White Matter of Centrum semiovale and periventricular areas. There are multiple enhancing Lesion in T1 weighted contrast

sclerosis which developed after the administration of interferons as a part of the routine treatment. The exact mechanism by which interferon therapy leads to central nervous system demyelination is still debatable but possible mechanisms suggest autoimmune phenomenon such as T cell mediated tissue damage which might be initiated or aggravated by interferon therapy [6]. The presence of HCV within the demyelinating lesions has also been held culprit in the trigger or prolongation of the disease process [7]. Apart from Hoftberger R et al., and few others, who have reported a case of fulminant CNS demyelination associated with interferon therapy for HCV infection, only rarely any literature suggests such side effects of interferon therapy [7]. In another report, a patient receiving multiple cycles of interferon α for seven months as a part of treatment of chronic hepatitis C went on to develop bilateral optic neuritis and decreased sensation of vibration and increased deep tendon reflex in the lower extremities. His MRI scan demonstrated multiple small high-intensity areas in the cerebral white matter and spinal cord [8].

Multiple sclerosis is an autoimmune disease characterized by a wide array of signs and symptoms, the diagnosis of which is based on revised McDonald's criteria [9]. The symptoms of multiple sclerosis present with different systemic problems which include cognitive impairment and disturbances of the respiratory and cardio vascular systems. Vague visual, motor and sensory disturbances are also seen [9]. Our patient developed significant loss of vision, with VEP confirming bilateral optic pathway dysfunction, which is one of the key features of multiple sclerosis. The MRI findings of our patient concluded areas of demyelination in the periventricular white matter. Lumbar puncture showed the presence of oligoclonal bands (IgG) in the CSF, mimicking a multiple sclerosis like condition. Hence, the diagnosis of a multiple sclerosis like condition due to interferon therapy was made.

CONCLUSION

Hepatitis C is common in our part of the world and as a developing country, builds up more pressure on the already burdened limited medical facilities. The diagnostic criteria for MS have evolved over

time to include MRI findings as an integral part of the diagnosis. Early in the disease, axonal loss leading to demyelination of both the white and gray matter leads to poor prognosis in patients whose treatment is delayed. Early treatment of MS is beneficial in the long run with minimal changes on MRI of the patient. Therefore, treatment with interferon alpha combined with ribavirin can cause unusual adverse effects in patients including bilateral optic neuritis and should be kept in the list of after effects. By finding the extent of the inflammation, and consequently doing an MRI alongside a lumbar puncture, can serve to diagnose a rare condition mimicking multiple sclerosis.

CONSENT

Written informed consent was obtained from the patient for publication of this Case report and any accompanying images. A copy of the written consent is available for review by the Editor of this journal.

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