

Hepatitis E virus in neurological disorders: a case of Parsonage-Turner syndrome

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ABSTRACT

Hepatitis E virus (HEV) infection is an emerging disease in developed countries with a broad clinical spectrum. In the absence of immunodeficiency or pregnancy, it is a mild and almost asymptomatic condition in most cases. However, extrahepatic manifestations, including neurological conditions, are common and may occasionally lead to permanent neurological sequelae.

Herein, we report the case of an immunocompetent patient who was admitted to our hospital with paresthesia and weakness in both the upper extremities associated with anicteric-elevated transaminases. The diagnosis was Parsonage-Turner syndrome (neuralgic amyotrophy) secondary to HEV infection. The diagnosis was reached via electromyography and serology tests. Neuralgic amyotrophy (NA) is a demyelinating axonal disease that affects the brachial plexus and is associated with HEV infection in up to 10% of cases.

We also emphasize the importance of requesting HEV serology in patients with neurological disease, especially with the involvement of the peripheral nervous system. Although the role of ribavirin remains to be fully determined, early diagnosis and treatment may result in an improved prognosis, thereby minimizing neurological sequelae.

Key words: Hepatitis E. Nervous system diseases. Brachial plexus neuritis. Parsonage-Turner syndrome.

INTRODUCTION

Hepatitis E virus (HEV) infection is an emerging disease in developed countries and genotypes 3 and 4 are the most prevalent. Extrahepatic symptoms, including neurological disorders, are common. However, a coincidental relationship has only been established in some cases (1). Guillain-Barré syndrome, Bell's facial palsy and Parsonage-Turner syndrome are the most common neurological disorders associated with HEV. Herein, we report a case of Parsonage-Turner syndrome (neuralgic amyotrophy) associated with HEV in a healthy immunocompetent patient.

CASE REPORT

A male aged 31 years with no medical history of interest was admitted to the neurology department with symptoms of pain, paresthesia and loss of strength in both the upper extremities associated with fever. Upon physical examination, the patient was found to be anicteric, with a non-pathological abdomen and an important loss of strength (4/5) during flexion and abduction of the right shoulder and patchy tactile hypoesthesia in both forearms. The cranial computed tomography (CT), cervical magnetic resonance (MR) and cerebrospinal fluid puncture were negative for a pathology. An acute demyelinating axonal lesion of the bilateral brachial plexus was confirmed by electromyography.

Evaluation by the gastroenterology department was requested due to the elevation of transaminases with cytolytic predominance, normal bilirubin and no analytical or clinical signs of hepatic failure. An abdominal ultrasound was negative. Furthermore, autoimmunity, iron profile, copper metabolism, hepatitis B virus (HBV), hepatitis C virus (HCV) and hepatitis A virus (HAV) serology were all negative. The study was completed with HEV IgM and C-reactive protein (CRP) serology, which were positive. Consequently, the diagnosis was bilateral plexopathy (Parsonage-Turner syndrome) and acute hepatitis secondary to HEV infection. Symptomatic treatment was initiated with anti-inflammatories and rehabilitation. There was a neurological improvement and normalization of the hepatic profile, and the viremia was negative.

DISCUSSION

HEV-related hepatitis is an increasingly prevalent infection in Spain. Although the sporadic cases reported in Western

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countries typically occur in travelers or immigrants from endemic regions, native cases of hepatitis E infection are increasingly common. Thus, suggesting a likely zoonosis and pigs are the main reservoir (2). Acute HEV-related hepatitis is usually a benign condition and is often asymptomatic and self-limited. However, in pregnant women and immunodeficient patients with chronic liver disease there is a risk of severe fulminant hepatic failure (2).

HEV is associated with numerous extrahepatic manifestations including acute pancreatitis, hemolytic anemia, thrombocytopaenia, glomerular disease and neurological disorders, among others. The immune-mediated mechanism and viral replication in tissues is thought to be the main mechanism involved (1,3). Neurological symptoms have been reported in both acute and chronic HEV-related hepatitis and HEV RNA has been isolated from cerebrospinal fluid on occasions (1). Of these, subacute disorders of the peripheral nervous system, Guillain-Barré syndrome or Parsonage-Turner syndrome (NA) are the most common.

NA is neuritis of the brachial plexus that is accompanied by pain, weakness and paresthesia in the upper extremities (4) and HEV is present in up to 10% of cases (5). NA secondary to HEV usually affects young males and is characterized by bilateral affection, involvement of the phrenic nerve and generally exhibiting a worse prognosis, often with sequelae (4,6,7). A discrete anicteric elevation in transaminases is also seen in up to 25% of cases (1). Treatment involves symptomatic relief of the pain with anti-inflammatories or opiates, and there is some controversy with regard to the use of glucocorticoids.

It is well known that HEV infection can evolve rapidly to severe chronic hepatitis and cirrhosis in more than 50% of cases in immunodeficient patients. Therefore, treatment with ribavirin is well established in chronic cases and/or immunodeficiency (8). The first recommended measure in these patients is a decrease in immunosuppression if possible, followed by treatment with ribavirin in the event of persistent viremia. However, there is little evidence in the literature with regard to the role of ribavirin in the treatment of the neurological symptoms associated with HEV. Nevertheless, early treatment may improve the prognosis by decreasing the neurological sequelae (1,9).

CONCLUSION

HEV-related hepatitis is an infection with a broad clinical spectrum that is increasingly prevalent in Western countries. Extrahepatic neurological symptoms are common and a causal relationship occurs in some peripheral nervous system disorders such as neuralgic amyotrophy or Guillain-Barré syndrome. Therefore, HEV serology should be determined in these scenarios.

REFERENCES

1. Pischke S, Hartl J, Pas SD, et al. Review hepatitis E virus: infection beyond the liver? *J Hepatol* 2018;66(5):1082-95. DOI: 10.1016/j.jhep.2016.11.016
2. Ron LM, Palacios MJ, Torres PL, et al. Hepatitis aguda virus E autóctona. Un diagnóstico en aumento. Análisis clínico-epidemiológico de nuestra experiencia. *Rev Esp Enferm Dig* 2017;109(5):344-9.
3. Debing Y, Moradpour D, Neyts J, et al. Review update on hepatitis E virology: implications for clinical practice. *J Hepatol* 2018;65(1):200-12. DOI: 10.1016/j.jhep.2016.02.045
4. Scanvion Q, Perrez T, Cassim F, et al. Neuralgic amyotrophy triggered by hepatitis E virus: a particular phenotype. *J Neurol* 2017;264(4):770-80. DOI: 10.1007/s00415-017-8433-z
5. Jeroen JJ, Van Eijk M, Madden RG, et al. Neuralgic amyotrophy and hepatitis E virus infection. *Am Acad Neurol* 2014. DOI: 10.1212/WNL.000000000000112
6. Dalton HR, Ripellino P, Madden RG, et al. Clinical phenotype and outcome of hepatitis E virus - Associated neuralgic amyotrophy. *Am Acad Neurol* 2017;89:909-17.
7. Dalton HR, Eijk JJJ Van, Cintas P, et al. Hepatitis E virus infection and acute non-traumatic neurological injury: a prospective multicentre study Hepatitis E virus infection and acute non-traumatic. *J Hepatol* 2018;67(5):925-32. DOI: 10.1016/j.jhep.2017.07.010
8. María Dolores Antón, Helena Cuchillo IF, Nadia Moreno, et al. Tratamiento con ribavirina de la infección crónica por el virus de la hepatitis E en pacientes trasplantados. *Rev Esp Enferm Dig* 2015;107:187-8.
9. Perrin HB, Cintas P, Abravanel F, et al. Neurologic disorders in immunocompetent patients with autochthonous acute hepatitis E. *Emerg Infect Dis* 2015;21(11). DOI: 10.3201/eid2111.141789