

Rare Cause of Hepatic Encephalopathy: Hereditary Hemorrhagic Telangiectasia

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Introduction

Hepatic encephalopathy (HE) is a neuropsychiatric syndrome which manifest as a various forms of cognitive, behavioral, and neurological impairment. The prevalence of HE is reported to be about 30~45% of patients with cirrhosis [1,2] and when minimal hepatic encephalopathy, HE with a mild motor and cognitive dysfunction is included the prevalence increases up to 60% [2,3].

The precise etiology and pathophysiology of hepatic encephalopathy is not fully understood and precise assessment of neurological and hepatic function is required. Lack of any clinical manifestations or diagnostic tools specific for HE makes correct diagnosis of HE very difficult. So it is usually required to make a diagnosis based upon combinations of imaging, neurophysiologic, and laboratory tests, excluding any metabolic, infectious, intracranial vascular causes which may cause similar symptoms. A high degree of suspicion is needed for cirrhotic patients but even for patients with mental and motor dysfunction in the absence of obvious metabolic or organic causes.

Serum ammonia levels can be beneficial in diagnosis of HE as ammonia is a major product involved in pathophysiology of HE [4]. However, it must be noted that ammonia level is normal in 10% of patients with severe HE [5], and it can increase in up to 69% of patients without HE [6]. Therefore it is important that ammonia level alone should not be used as a definitive diagnostic tool for HE.

Magnetic resonance (MR) of brain has become a standard diagnostic modality for assessing neurological dysfunction. MR can show some characteristic features present in brain of cirrhotic patient with HE: a) deposition of paramagnetic substances in the basal ganglia, b) a decrease in the size of the brain, and c) an increase in brain water. But it is rather helpful in excluding organic brain diseases [7-9]. Furthermore its high cost makes it difficult to apply in clinical practice. Electroencephalogram of patients with HE can show high voltage slow triphasic wave and provide an aid in diagnosing HE.

Assessment of portosystemic shunt in patients with HE can be very useful, especially when patients does not have known underlying causes such as liver cirrhosis. Portosystemic shunt is well known to be a rare cause of HE by many previous studies and reports [10]. Most valuable imaging modality for diagnosing portosystemic shunt is computed tomography (CT), MR, and endoscopic ultrasonography.

Hereditary hemorrhagic telangiectasia (HHT) is an autosomal dominant disorder characterized by portosystemic shunt [11]. We recently reported a case of recurrent HE in patient with HHT [12]. It is a very rare cause of HE with a reported incidence of 2.5~19.4 per 100,000 [13-15]. Two major types of HHT, type 1 and type 2, are related to the mutation of endoglin (ENG) and activin A receptor type II-like 1 (ACVRL 1), respectively. Type I shows relatively severe manifestations, with an earlier age of onset of symptoms such as

epistaxis and appearance of telangiectasia, and a higher incidence of pulmonary AVM, while type II tends to show more hepatic involvements [13,16].

Diagnosis of HHT is based on Curacao criteria published in 2000, when at least three of the following four criteria are present: 1) Recurrent spontaneous epistaxis; 2) cutaneous telangiectasia of lips, oral cavity, nose, and finger and toes; 3) visceral telangiectasia of gastrointestinal tract; and 4) AVM of lungs, liver, and brain [17]. When patients diagnosed with HHT present with HE, thorough evaluation for portosystemic shunt must be taken.

Treatment for hepatic manifestation of HHT is challenging and there is no ultimate treatment for complete cure. The mainstay of treatments is aimed at reducing shunt by surgical ligation and transarterial embolization [18]. The only proposed definitive curative treatment is liver transplantation. Also conservative management based on treatment for advanced liver cirrhosis could be tried to reduce symptoms and improve patients quality of life.

HE is a disease whose diagnosis and treatment can be challenging. When other common causes of HE such as liver cirrhosis is excluded, high suspicion for HHT must be taken into consideration. Through evaluation for even rare causes and carefully planned treatment strategy can be a key to success in diagnosis and treatment of HE.

References

1. Amodio P, Del Piccolo F, Pettenò E, Mapelli D, Angeli P, et al. (2001) Prevalence and prognostic value of quantified electroencephalogram (EEG) alterations in cirrhotic patients. *J Hepatol* 35: 37-45.
2. Romero-Gómez M, Boza F, García-Valdecasas MS, García E, Aguilar-Reina J (2001) Subclinical hepatic encephalopathy predicts the development of overt hepatic encephalopathy. *Am J Gastroenterol* 96: 2718-2723.
3. Das A, Dhiman RK, Saraswat VA, Verma M, Naik SR (2001) Prevalence and natural history of subclinical hepatic encephalopathy in cirrhosis. *J Gastroenterol Hepatol* 16: 531-535.
4. Butterworth RF (2002) Pathophysiology of hepatic encephalopathy: a new look at ammonia. *Metab Brain Dis* 17: 221-227.
5. Stahl J (1963) Studies of the blood ammonia in liver disease. Its diagnostic, prognostic, and therapeutic significance. *Ann Intern Med* 58: 1-24.
6. Ong JP, Aggarwal A, Krieger D, Easley KA, Karafa MT, et al. (2003) Correlation between ammonia levels and the severity of hepatic encephalopathy. *American Journal of Medicine* 114: 188-193.
7. Rovira A, Alonso J, Cordoba J (2008) MR imaging findings in hepatic encephalopathy. *AJNR Am J Neuroradiol* 29: 1612-1621.
8. Morgan MY (1996) Noninvasive neuroinvestigation in liver disease. *Semin Liver Dis* 16: 293-314.
9. Thuluvath PJ, Edwin D, Yue NC, deVilliers C, Hochman S, et al (1995) Increased signals seen in globus pallidus in T1-weighted magnetic resonance imaging in cirrhotics are not suggestive of chronic hepatic encephalopathy. *Hepatology* 21: 440-442.

10. Hassoun Z, Deschênes M, Lafortune M, Dufresne MP, Perreault P, et al. (2001) Relationship between pre-TIPS liver perfusion by the portal vein and the incidence of post-TIPS chronic hepatic encephalopathy. *Am J Gastroenterol* 96: 1205-1209.
11. Begbie ME, Wallace GM, Shovlin CL (2003) Hereditary haemorrhagic telangiectasia (Osler-Weber-Rendu syndrome): a view from the 21st century. *Postgrad Med J* 79: 18-24.
12. Ha J, Son BK, Ahn SB, Jo YK, Kim SH, et al. (2015) Osler-Weber-Rendu disease presenting as recurrent portosystemic encephalopathy in a 75-year-old female patient. *Korean J Gastroenterol* 65: 57-61.
13. Kjeldsen AD, Vase P, Green A (1999) Hereditary haemorrhagic telangiectasia: a population-based study of prevalence and mortality in Danish patients. *J Intern Med* 245: 31-39.
14. Plauchu H, de Chadarevian JP, Bideau A, Robert JM (1989) Age-related clinical profile of hereditary hemorrhagic telangiectasia in an epidemiologically recruited population. *Am J Med Genet* 32: 291-297.
15. Porteous ME, Burn J, Proctor SJ (1992) Hereditary haemorrhagic telangiectasia: a clinical analysis. *J Med Genet* 29: 527-530.
16. Bossler AD, Richards J, George C, Godmilow L, Ganguly A (2006) Novel mutations in ENG and ACVRL1 identified in a series of 200 individuals undergoing clinical genetic testing for hereditary hemorrhagic telangiectasia (HHT): correlation of genotype with phenotype. *Hum Mutat* 27: 667-675.
17. Shovlin CL, Guttmacher AE, Buscarini E, Faughnan ME, Hyland RH, et al. (2000) Diagnostic criteria for hereditary hemorrhagic telangiectasia (Rendu-Osler-Weber syndrome). *Am J Med Genet* 91: 66-67.
18. Garcia-Tsao G (2007) Liver involvement in hereditary hemorrhagic telangiectasia (HHT). *J Hepatol* 46: 499-507.