HEPATIC ENCEPHALOPATHY

What is hepatic encephalopathy?

Hepatic encephalopathy (HE) is a disorder of mental activity, neuromuscular function and consciousness that occurs as a result of either chronic or acute liver failure. This complex neuropsychiatric syndrome is primarily caused by metabolic abnormalities. The syndrome may occur spontaneously or be induced by some precipitating factor and may be reversible by improvement in liver function, correction of the precipitating factors or the administration of therapy. However, HE can eventually lead to coma, and may be fatal especially in acute liver failure.

What are the different types of hepatic encephalopathy?

Acute encephalopathy is generally rapidly progressive over a short course and is a complication of acute liver disease. This type of HE is a sign of terminal liver failure and most often occurs in patients with acute fulminant viral hepatitis, toxic hepatitis and Reye’s syndrome.

Chronic encephalopathy involves multiple recurrences of observable HE. It requires continuous therapy to decrease or prevent the development of symptoms during intervening periods. Usually, this type of HE is found in patients who have cirrhosis with extensive portal collateral circulation with surgically-created or spontaneously-evolving shunts. In between obvious episodes, HE can be subtle and low-grade such that it may not be noticeable. Chronic HE is a sign of significant decompensation from cirrhosis.

Chronic cerebral degeneration and myelopathy are possibly permanent neurological abnormalities that are unresponsive to therapy. This condition is very rare. Patients can have difficulty with balance and walking. Occasionally, tremors similar to Parkinson’s disease can also be present.

What are the stages of hepatic encephalopathy?

There are four different stages of symptoms of HE. The abnormalities that reflect mental and personality changes are distinguished from those reflecting neuromuscular functions.

- In Stage 1, the symptoms include short attention span, nightmares and poor night time sleep with daytime sleepiness, restlessness, depression, aimless wandering, anxiety and irritability.
- In Stage 2, the mental and personality changes include obvious drowsiness, obvious personality changes, gross impairment of ability to do mental tasks, slowed response, disobedience, sullenness, disorientation for time and place.
- In Stage 3, the symptoms include bizarre behavior, occasional fits of rage, marked confusion, incomprehensible speech, paranoia and anger.
- In Stage 4, coma is present and can be either responsive or unresponsive to painful stimuli.
HE can also be subtle and on-going. It may not be noticeable to anyone except close family members, or even the patient, who may notice mild forgetfulness, lack of concentration or that he or she is “not as sharp” as before.

How is hepatic encephalopathy diagnosed?

The diagnosis of HE is made primarily by recognition of neuropsychiatric changes occurring in a patient with known liver disease. In a patient with cirrhosis, whose liver disease has been followed for some time, the diagnosis becomes readily apparent with development of several of the symptoms mentioned above. When confronted with a patient who presents with an encephalopathy or a patient known to have a history of previous or current liver disease and who has neurological impairment, it is very important that attention should be paid to neurological symptoms. Such symptoms include personality changes, hypersomnia, reversal of sleep pattern, presence of precipitating factors such as gastrointestinal bleeding, use of sedative hypnotic drugs, etc. The presence of a flapping tremor (in which hands cannot be held steady when the patient stretches out arms) is also an important physical sign in a patient with HE. A blood test may be performed to evaluate the ammonia level. Fetor hepaticus (a sweet, musty breath) may also present as a physical sign. There is no specific diagnostic test, but rather the improvement with treatment is the usual method of diagnosis.

Why does hepatic encephalopathy develop?

The precise pathogenesis of HE still remains unknown. However, a number of substances and mechanisms have been implicated to cause HE. These substances include ammonia, mercaptans, free fatty acids, amino acid imbalance, altered GABA neurotransmission, other neurotransmitter changes, synaptic plasma membrane changes and false neurotransmitters. The disorders that occur when the liver fails are so complex that it is conceivable (and quite likely) that HE results from the complicated interplay of many of the factors mentioned above.

What is the treatment for hepatic encephalopathy?

The most important aspect of patient management is the prompt recognition and correction of precipitating factors, when possible. Multiple precipitating factors are often present. These factors include dehydration, kidney failure, use of sedative or narcotics, GI bleeding, electrolyte abnormalities, dietary protein increase, infection, constipation and exacerbation of liver disease. The importance of recognizing and correcting any precipitating factors in patients with HE cannot be overemphasized. Infections, kidney failure and electrolyte abnormalities need to be treated and gastrointestinal bleeding must be stopped.

Patients with severe, repeated cases of encephalopathy may be told to reduce protein in the diet to lower ammonia production. The higher fiber content of a vegetable diet speeds up the passage of food through the intestine thereby altering the acidity in the intestines and helping to reduce the absorption of ammonia. However, dietary counselling is very important as too little protein in the diet can lead to malnutrition.

Lactulose is a non-absorbable synthetic sugar that is taken by mouth. It changes ammonia into ammonium in the colon which can then be excreted. Neomycin, Metronidazole and Rifaximin are antibiotics that may be used to control the growth of bacteria that produces ammonia in the colon. Sedatives, narcotics and any other medications that are broken down by the liver should be avoided if possible. Patients with alcoholic cirrhosis and
HE should receive thiamine upon admission to hospital. Other medications and treatments may be recommended.

What are the expectations or prognosis?

Obvious episodes of HE are frequently reversible if encephalopathy is triggered by a reversible cause. Patients with chronic liver disease are susceptible to future episodes of encephalopathy. There is a high mortality rate for HE patients who go into a coma. Recovery and risk vary from patient to patient and is dependent on the degree of liver failure, presence of other diseases, and time of treatment. It is important to appreciate that patients who have cirrhosis and have had episodes of HE are not allowed to drive or operate a motor vehicle, even if they may have “recovered” between episodes. If there is any doubt that the patient will refrain from driving, the local Department of Motor Vehicles must be informed. In many patients with chronic liver disease, liver transplantation entirely reverses HE. Thus, liver transplantation is often considered in some patients with HE.

Reviewed 2015