Hepatic Encephalopathy



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Characteristics/Definition

Seen in the Setting of Cirrhosis
C-roses
Hepatic encephalopathy is typically seen in the setting of cirrhosis. This is because the liver dysfunction seen in cirrhosis results in decreased ability to metabolize ammonia, causing it to accumulate.

Hyperammonemia
Hiker-ammo
The development of hepatic encephalopathy is thought to be related to the accumulation of ammonia in the blood due to liver dysfunction and/or porto-systemic shunting, as is seen following a TIPS procedure. It can also be precipitated if in addition to liver dysfunction there is increased absorption of ammonia, such as in the case of a GI bleed, or decreased excretion due to renal dysfunction.

Altered Mental Status
Delta-signs spinning around head
The presentation of hepatic encephalopathy is characterized by altered mental status, which may range from mild confusion and forgetfulness to coma.

Coma
Comb
Patients with severe hepatic encephalopathy due to the effects of extremely high levels of ammonia on the brain may present in an unresponsive, comatose state.

TIPS
Q-tips
Hepatic encephalopathy may also occur following a transjugular intrahepatic portosystemic shunt (TIPS) procedure. This procedure is done to relieve the pressure from portal hypertension on sites of porto-systemic anastomoses, such as in esophageal varices. The procedure shunts portal blood flow past the liver to the systemic circulation. While this relieves pressure, it also prevents the liver from metabolizing the blood that bypasses it, leading to increased ammonia in the circulation.

Asterixis
Asterix
Asterixis, seen on physical exam as hand-flapping when a patient is asked to hold their hands out as if they are stopping traffic, is characteristic of hepatic encephalopathy. It is thought to be caused by the deleterious effect of increased blood ammonia on the basal ganglia, which are related to movement and posture.

Management

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Lactulose

bLack-tulip

Lactulose is a first line medication in the treatment and prevention of hepatic encephalopathy. Lactulose is a non-absorbable disaccharide that is metabolized by the intestinal flora to produce protons. These protons oxidize NH3 (ammonia), which is able to be absorbed by the intestine into the body's circulation, to non-absorbable NH4+ (ammonium).

Rifaximin

Rifle-fax

Rifaxmin is a medication used in the treatment and prevention of hepatic encephalopathy, typically second-line to lactulose. It is an antibiotic that acts by inhibiting protein synthesis in certain gut flora and inhibiting their growth, thus reducing the production of ammonia by the gut microbiota.

Liver Transplant

Liver Train-plant

In patients with hepatic encephalopathy who have extremely poor liver function, liver transplant may be the only curative method.

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