Approach to hepatic encephalopathy

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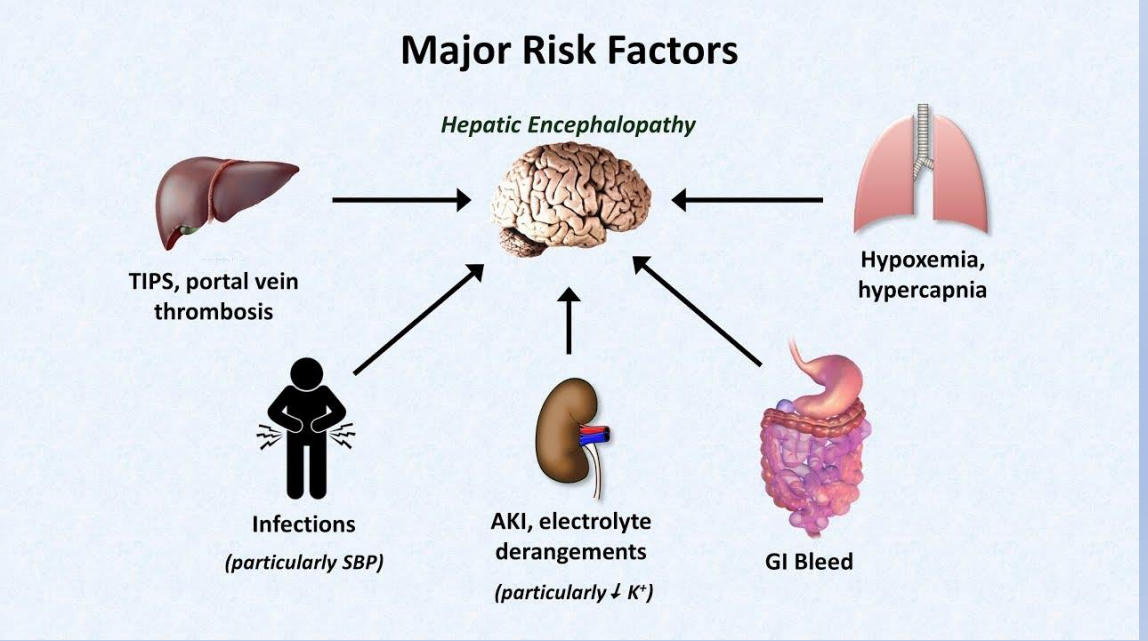


- **A 55 years old gentle man , a known case of liver cirrhosis (due to chronic HBV) , brought to the ER by his son , who noticed that his father has been disoriented through out the last 2 days . Take a focused history to identify the etiology for his presentation.**

1. **So your history should be focused first to exclude all other differentials of altered LOC ...such as intracranial hemorhage, stroke, renal failure..**

****This can be done by determining the course and progression of the disease, for example intracranial hemorhage would present over a shorter period of time with rapid deterioration. Stroke will present with focal neurological deficit (hemiparesis) ; even though patients with HE can present with focal neurological deficit.**

2. Then you have to find a precipitating factor for his encephalopathy.

3. Also you have to assess the grade of encephalopathy.

- To find a precipitating factor you have to ask about any source of infection (fever, chills, rigors, cough, sputum , abd pain , diarrhea, dysurea)……. Dont forget to ask about abd distension and pain (spontaneous bacterial peritonitis)
- Also take a detailed drug hx(narcotis, analgesia, alcohol, diuretics)
- Dehydration and electrolyte dusturbances (vomiting ,diarrhea)
- High protien diet and constipation.
- Gi bleeding (melena, coffee ground vomiting, hematemesis, hematochezia)
- Recent surgeries or procedures (TIPS)

- **What is the grading system used for HE?**

WEST HAVEN CRITERIA

Stage	Consciousness	Intellect and behaviour	Neurologic findings
0	Normal.	Normal.	Normal examination; if impaired psychomotor testing, then mHE.
1	Mild lack of awareness.	Shortened attention span; impaired addition or substraction.	Mild asterixis or tremor.
2	Lethargic.	Disoriented; inappropriate behaviour.	Obvious asterixis; slurred speech.
3	Somnolent but arousable.	Gross disorientation; bizarre behaviour.	Muscular rigidity and clonus; Hyper-reflexia.
4	Coma.	Coma.	Decerebrate posturing.

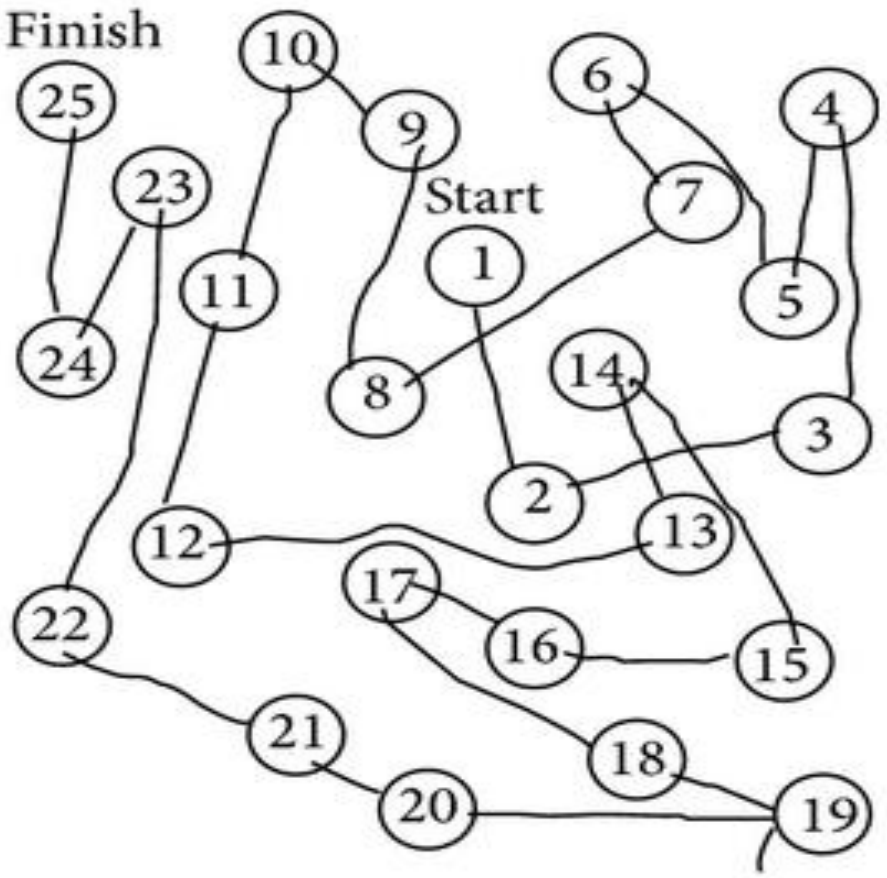
- So you have to ask about psychatric(depression , euphoria , inappropriate behaviour) and neurological (slurred speech , ataxia) symptoms .

- Our patient's son reports that his father seems to be disoriented , lethargic , and sleepy during the last 2 days .
- He has no GI bleeding symptoms .
- No fever , no cough, no abd pain or dysurea.
- No recent drugs or alcohol . But he reports that his father did not have bowel motions since 4 days .

- What findings in physical exam are you going to focus on?

- First you have to assess vital signs for fever, hypotension, tachypnea or bradypnea.
- Then you have to assess his Glasgow coma scale(GCS)
- Do a complete neurological exam(Hyporeflexia)
- In patients with minimal HE you have to do psychometric testing (such as Number connection test)
- Look for all stigmata of chronic liver disease (you should know them by heart)
- Perform rectal exam to rule out GI Bleeding

Stage of HE	Time
0	Up to 30 s
0-I	31–50 s
I-II	51–80 s
II-III	81–120 s
III	Forced termination



- Our patient vitals: 100/60
- 85 BPM, 16 RR 36.5 C
- GCS 14/15 disoriented to time , apathic
- + astrexis
- No focal neurological deficit
- Spider angiomas , Abd distended with shifting dullness , splenomegaly , +1 LL edema.
- Rectal exam : empty rectum

- Labs???

- Send
- CBC , KFT and electrolytes
- Lft
- PT PTT INR
- Urine analysis and culture
- Peritoneal fluid analysis
- Serum alpha feto protein and abd US can be to rule out Hepatocellular carcinoma as a precipitating factor for HE.
- CXR
- Computed tomography scan of the brain if the clinical findings suggest another cause for the patient's findings may be present (such as a subdural hematoma from trauma).

- AMMONIA ????

High blood-ammonia levels alone do not add any diagnostic, staging, or prognostic value in HE patients

with CLD.

However, in case an ammonia level is checked in a patient with HE and it is normal, the diagnosis of HE is in question.

Our patient’ labs

- **Hg 10**
- **WBC 4**
- **Platelets 90**
- **INR 1.7**
- **Creatinine 1.1**
- **K 4**
- **Na 130**
- **AST 28**
- **ALT 23**
- **Negative urine analysis**
- **CXR FREE**
- **Peritoneal fluid analysis(WBC 100 ...20% segmented)**

MANAGEMENT

- **Always start with ABC's**
- **If your patient is comatosed or can not protect his airways , you have to intubate.**
- **If he is hypovolemic (bleeding) , you have to start IV fluids and give blood units if needed.**

- **Your treatment goals in patients with HE are directed toward treatment of the underlying cause and to prevent recurrence of the HE.**

- **For example if the patient has infection , start AB ,If he is bleeding stop bleeding ..so it depends on the underlying precipitating factor .**

- **Second you have to lower his high ammonia level .**

- **Lactulose is the first choice for treatment of episodic HE.**
- **The dose of lactulose (30 to 45 mL [20 to 30 g] two to four times per day) should be titrated to achieve two to three soft stools per day.**
- **Lactulose enemas can be given if the patient cannot take lactulose orally**

- **For patients who have not improved within 48 hours of starting lactulose , rifaximin is used.**

- **Rifaximin is an effective add-on therapy to lactulose for prevention of OHE recurrence**

DIET

Daily energy intakes should be 35-40 kcal/kg ideal body weight .

Daily protein intake should be 1.2-1.5 g/kg/ day .

Small meals or liquid nutritional supplements evenly distributed throughout the day and a late-night snack should be offered .

Oral BCAA supplementation may allow recommended nitrogen intake to be achieved and maintained in patients intolerant of dietary protein.