Community & Family medicine

MNT liver disease

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* **Factors account for the unfeasibility of a standardized liver diet.**
*  Variations among the different types of liver disease (for example, alcoholic liver disease versus primary biliary cirrhosis)
*  Stage of the liver disease (for example, stable liver disease without much damage versus unstable decompensated cirrhosis).
*  Other medical disorders even if unrelated to their liver disease, such as diabetes or heart disease, must also be factored into any diet.
* Each person has her own individual nutritional requirements, and these requirements may change over time.

MEAL PATTERN

*  Most people with liver disease find that eating multiple small meals throughout the day is the best approach, as it maximizes energy levels and the ability to digest and absorb food.
*  However, if one insists on eating three meals per day try to follow the saying “ eat breakfast like a king, lunch like prince and dinner like a pauper”.
*  Patients with advanced liver disease should be recommended a diet providing adequate calories, proteins, minerals and vitamines.
* Dietary supplementation is much essential in CLD, which can decrease malnutrition, infections and sepsis happened.
* **DIET IN ACUTE LIVER DISEASE**
*  1. Acute Hepatitis
*  2. Fulminant Hepatitis
*  3. Acute Cholestasis

**1. Acute Hepatitis**

*  Patients with acute hepatitis are usually adequately nourished before the illness.
*  Acute hepatitis is usually a mild disease, associated with only a few days of anorexia, nausea, and occasionally vomiting.
*  These are usually well tolerated by the patients, who require no nutritional supplementation, and are encouraged to eat normally.
*  Usually they can take some food by mouth and enough fluids to prevent dehydration.
*  Old literature emphasized lipid restriction. This, however, is not true, and lipid restriction has no role in acute hepatitis unless fats aggravate nausea in an individual patient.
*  Dietary restrictions have no place in the management of mild or moderate acute parenchymal liver disease.
*  Nutritional supplementation and iv fluids and nutrients are reserved for the patients with excessive nausea and vomiting who cannot maintain a sufficient fluid balance.
*  Alcohol should be avoided in acute hepatitis and for the 6 months following recovery

**2. Fulminant Hepatitis**

*  In FHF, hypoglycemia is a major threat, and may be severe.
*  Patients may become malnourished rapidly due to the hypercatabolic state
*  They should, in addition, receive nutritional support to suppress protein hypercatabolism and help liver regeneration.
* The infusion of amino acid / glucose mixtures is supplied.

**3. Acute Cholestasis**

*  Patients with acute biliary obstruction require immediate surgical or endoscopic relief.
*  There is no need for nutritional supplementation except for parenteral vitamin K to correct the prothrombin time prior to the procedure (unless there are pre-existing disorders that compromised the nutritional status)

**DIET IN CHRONIC LIVER DISEASE**

**Causes of malnutrition**

 \_ Anorexia and early satiety

  \_ Nausea and vomiting

  \_ Steatorrhea and malabsorption

  \_ Medication-induced losses

  \_ Alterations in energy and protein metabolism

  \_ Restricted diets

  \_ Paracenthesis induced PT loss

  \_ Complications

* **a. Energy Requirements**
*  Patients with chronic liver disease should be encouraged to maintain adequate energy consumption.
*  Patients usually need 35-45 kcal/kg/day.
*  Excess calories should be avoided, particularly as carbohydrates, as this promotes hepatic lipogenesis, liver dysfunction, and increase CO2 production and the work of breathing.
*  § Cirrhosis is a disease of accelerated starvation ,so patients should avoid long time without feeding.
*  Patients often do better on multiple small meals with a late bed-time meal, which has been shown to reduce the need for gluconeogenesis and conserve proteins and nitrogen balance after an overnight fast, and prevent protein breakdown.

**b. Lipids**

*  Around 30% of total calorie intake should be supplied as fat, People who are overweight should aim for 10 % .
*  Lipid emulsions depend little on the liver for metabolism, are well tolerated in patients with cirrhosis.
* Thus lipid restriction has no scientific basis in patients with cirrhosis.
*  Fat should be provided as polyunsaturated fatty acids, with less than 50% long chain triglycerides.
*  Fat helps make food tastier. This is important for people who suffer from a suppressed appetite due to chronic liver disease.
*  People need some fat in order to properly absorb the four fat-soluble vitamins—A, D, E, and K. Without some fat, these vitamins may become deficient in the body, even if they are taken in supplemental form.
* This type of vitamin deficiency sometimes occurs in people with cholestatic diseases, such as primary biliary cirrhosis.

**c. Proteins.**

*  Proteins should not be restricted in patients with liver disease unless they become protein intolerant due to encephalopathy .
*  Protein intake should be in the range of 1-1.5 g/kg/day.
* **Oral BCAAs in cirrhosis with or without chronic encephalopathy**
*  Oral BCAAs are generally used in athletes
* BCAAs supplementation can only be recommended in p’t at high risk of encephalopathy
*  BCAA have an anticatabolic effect in patients with chronic liver disease because of their ability to serve as an energy substrate for muscles.
* *BCAAs in cirrhosis with acute encephalopathy* :
*  Certainly BCAAs don’t worsen encephalopathy and may be safely used to maintain an adequate PT intake in subjects at risk of altered mental state.

**Vitamins And Liver Disease and Hepatitis**

* Vitamins They are essential to human development, growth, and functioning. Normally, the required amount is supplied by eating a well-rounded diet.
* Vitamins must pass through the liver to be metabolized.
* If taken to excess, any vitamin has the potential to cause serious health problems.
*  The damage is much greater , depending upon the severity of liver damage.

**Calcium (Ca)**

*  Patients with chronic liver disease are at increased risk for the development of osteoporosis, it is important to consume foods rich in calcium and/or to supplement their diets with calcium .

**Sodium ( Na)**

* The body requires only about 50 to 400 mg of sodium per day. Yet, the average diet consumes about twenty -five -to- thirty -five times that amount!
*  While this over- consumption of salt is not dangerous for most healthy individuals, it can create problems for advanced liver disease.

**Iron (Fe)**

*  The amount of iron in the body is about 3-4 grams, ( 50mg per kg in men and 40 mg per kg in women).
*  The body has a limited ability to eliminate excess iron from the body.
*  Only about 1-2 mg of iron is capable of being excreted each day.
*  Excess iron ingestion (whether in the form of food or supplements), is stored in body tissues, primarily the liver. that is most susceptible to iron toxicity (depend on stage of liver damage).
*  There are two types of dietary iron.
*  Heme, or animal iron (i.e. red meat), is well absorbed from the diet.
*  Non heme, or plant iron (i.e. spinach), is poorly absorbed into the body (spinach is not a good source of iron).

**Zinc**

* Zinc plays a crucial role in the metabolism of protein, carbohydrate, lipid, nucleic acid, and ammonia.
* zinc supplementation improves glucose disposal in patients with cirrhosis.
* Zinc also inhibits hepatic inflammation and hepatic fibrosis.
* More recently, zinc supplementation was shown to lower the cumulative incidence of HCC in patients with HCV infection.
* As the serum zinc level is decreased in patients with HCV infection supplementation of zinc could be a therapeutic option.

**Smoking**

*  Smoking suppresses endogenous Interferon leading to flare of HCV .
*  Smoking increases iron content leading to increased cirrhosis viral flare and HCC .
*  Smoking increases incidence of hepatic malignancies .
*  Smoking markedly increases micro- &macrovascular complication of DM .
* **Caffeine’s Effect on Hepatitis/Liver Disease**
*  Caffeine is present in coffee, tea, chocolate, cola, and some over-the-counter medications.
*  Caffeine is metabolized through the liver. However, caffeine itself is not directly harmful to the liver.
*  Some people may experience a rapid heartbeat and/or palpitations from caffeine consumption. [
*  Excessive intake of caffeine in patients with chronic liver disease at increased risk for osteoporosis and bone fractures.
*  In cirrhotic patients, the metabolism of caffeine is slowed, resulting in higher concentrations of caffeine in the blood.
*  In patients treated with interferon cause symptoms similar to those caused by caffeine.
*  Recent study has suggested that caffeine may in be advantageous to people with liver disease.
*  However,this result has not been substantiated by other studies .

**3. Decompensated Liver Disease**

a) Encephalopathy

 b) Ascites

**Diet Modification**

*  Several studies have shown that vegetable protein is better tolerated in patients with chronic encephalopathy.
* Vegetables are better tolerated than milk, which is better tolerated than meat.
*  Patients in coma should be placed on no protein diet till recovery starts, and a short term protein deprivation can be tolerated without adverse nutritional effects.
*  Severe prolonged protein restriction as a low protein diet decreases renal plasma flow and GFR, and this may impair borderline renal function in patients with decompensated cirrhosis . .
* **Role of Zinc**
*  The relation of zinc to encephalopathy is controversial, but a supplementation with 600 mg zinc per day improved encephalopathy

**b) Ascites**

* Ø Na Balance in Ascites:
* For mobilization of ascites, Na has to be restricted to less than the daily losses.
*  Salt restricted diet could be made more palatable by seasoning with lemon juice, onion, vinegar, garlic, pepper, mustard, salt free ketchup.

**Fluid Restriction**

*  Fluid restriction of all patients with ascites is inappropriate.
*  Patients should drink, but not to excess.
*  Water restriction to treat hyponatremia is indicated only if this is severe.
*  Gradually developing hyponatremia in cirrhosis, though a poor prognostic sign, has no life threatening hazards

**DIET AS A CAUSE OF LIVER DISEASE**

A . Obesity.

B. Hypervitaminosis A

**A . Obesity**

* Obesity is associated with:

1. The formation of gall stones.

2. fat accumulation in cells i.e. steatosis called (non-alcoholic fatty liver disease NAFLD),which is more common .

*  Fibrosis is more severe with morbid and long standing obesity and with severe steatosis.
*  Occasionally, obese patients may develop an inflammation that is histologically similar to alcoholic hepatitis with the formation of Mallory hyaline bodies (Non Alcoholic SteatoHepatitis NASH).
*  This lesion is not related to the degree of obesity, but occasionally is preceded by a short period of weight loss. This is usually a mild slowly progressive lesion, but could progress to cirrhosis.
*  Steatosis is reversible, and near normal histology is observed in obese individuals who achieve and maintain substantial weight reduction to normal range, exercise& omega 3 rich diet.

**B. Hypervitaminosis A**

* Results from prolonged exposure to high doses of vitamin A, in the range of 100,000 U daily in adults. The liver manifestations include hepatomegaly, with hypertrophy of fat storing cells, fibrosis, central vein sclerosis, and cirrhosis.