Nutrition in Liver Disease

An overview of the EASL Clinical Practice Guidelines

Marike Bauermeister
Registered Dietitian
Wits Donald Gordon Medical Centre

Malnutrition

Malnutrition is a complication in liver cirrhosis seen very frequently

Malnutrition is associated with:

- The progression of the disease
- Higher rate of complications incl infections, ascites and HE
- Associated with a worse prognosis

- Malnutrition is easily recognised in sarcopenic and underweight patients
- Obesity does not rule out malnutrition - sarcopenia may be overlooked in these patients (NASH)
- Whether malnutrition in cirrhotic patients is reversible is controversial. Anabolic resistance and dysregulated proteostasis can result in failure to respond to supplementation
- But there is consensus on the importance to improve the patients dietary intake and avoiding unnecessary restrictions which may lead to further weight loss and muscle loss

DETERMINING THE NUTRITIONAL STATUS

1. Weight and height

BMI - < 18.5 underweight (? accuracy - dry weight vs actual weight)

BMI > 30 obese in the absence of water retention

2. TSF and MUAC

3. Grip strength

4. History: Nutritional intake, previous weight and recent weight loss

ASSESSING SARCOPENIA

1. MUAC and TSF - simple to perform, low cost, not affected by fluid retention
2. Handgrip strength - simple, inexpensive and effective
3. CT imaging L3 vertebrae - cost and exposure to radiation, but if the patient needs CT imaging eg HCC or portal vein thrombosis this may be a useful way of determining sarcopenia

Compared to the diagnosis of sarcopenia with CT imaging the predictive value of MUAC was shown to be good

4. Bio-impedance scales - can be inaccurate in patients with ascites and oedema

5. Dietary Interview:

- Determine protein and calorie intake, fluid and sodium intake
- Identify deficiencies
- Symptoms which may affect intake: nausea/vomiting, ascites (early satiety), fatigue, aversion to food/taste changes, low sodium diet affects palatability/restrictions, diarrhoea/steatorrhoea
- HE challenging, family involvement

PROTEIN AND CALORIE REQUIREMENTS

- During cirrhosis protein synthesis decreases and gluconeogenesis from amino acids increases, resulting in sarcopenia.
- This in combination with a poor intake due to restrictions/fasting for investigations/low appetite/taste changes/HE further contributes to sarcopenia.

- Calorie supply needs to balance TEE, this is difficult to determine and is estimated. When available indirect calometry can be used. Varies between 28 - 37,5kcal/kg/day.

35kcal/kg/day

- Recommended protein intake in cirrhotic patients: 1.2 - 1.5g/kg/day

FEEDING THE PATIENT

- Starvation is related with proteolysis
- Frequent meals and including a late bedtime snack to shorten nocturnal fasting is recommended
- Reach protein and calorie requirements via food intake - often difficult - start oral supplementation
- Patients who are unable to achieve requirements orally - enteral and parenteral nutrition
- Calorie dense feed in patients with ascites/fluid restricted
- Feed high in MCT helpful in steatorrhea/chylous ascites/jaundice
- Consider PN if not tolerating NGF eg oedematous gut - use TPN with omega 3 oils

OBESITY

- NASH - most patients obese
- Many patients with cirrhosis have a sedentary lifestyle contributing to obesity
- Data from several studies suggests weight loss improves outcome in compensated liver cirrhosis
- Realistic goal 5 - 10% - moderate calorie reduction and adequate protein

MICRONUTRIENTS

Deficiencies related to:

- Decreased intake
- Diminished reserves
- Malabsorption

Common Deficiencies:

- Fat soluble vitamins: Vitamin D and Vitamin K
- Thiamine (B1)
- Deficiencies in B9, B6 and B12 may also develop

Multivitamins - cheap and side effect free

- Hyponatreamia common in cirrhotic patients

Monitoring of sodium intake and water intake is important. Severe sodium restriction not recommended - makes the diet unpalatable leading to a reduction in calorie and protein intake

- Zinc concentrations are reduced in patients with cirrhosis - Zinc has been implicated in the pathogenesis of HE

BONE DISEASE IN CIRRHOTIC PATIENTS

- Osteoporosis is common in patients with liver disease (contributing factors: nutritional, hormonal, metabolic, genetic)
- Treatment includes: Balanced diet, Calcium 1000 - 1500mg/day, Vitamin D 400 - 800IU/day
- Increase exercise and decrease alcohol and tobacco use (contribute to bone loss)

LIVER TRANSPLANTATION

Pre - op
Under nutrition (BMI <18,5) and Severe Obesity (BMI >40) associated with increased mortality and morbidity - ideally this needs to be corrected/improved pre transplant

Post op
Early feeding post op reduce ICU stay, infections and complications
In the early post op phase there may be a disturbance of glucose metabolism and insulin resistance - manage carbohydrates and insulin dose

HEPATIC ENCEPHALOPATHY

- A low protein intake can worsen HE.
- Starvation/Protein restriction - Increases proteolysis and gluconeogensis (muscle catabolism) - Increase in endogenously produced urea and ammonia - worsen HE
- Protein and calorie intake should not be lower than any other cirrhotic patient
- HE more prevalent in patients with muscle depletion (Merli et al 2013)
- Incidence HE 46% sarcopenic vs 27% non sarcope*n*ic patients (Kalaitzakis et al, 2007)
- Evaluate regular bowel movements and counsel on constipation

BCAA

BCAA (leucine, isoleucine, valine)

- BCAA may have a beneficial effect on HE (duration and severity of HE) , but standard supplements can be used in patients not presenting with HE
- Diet: Encourage the consumption of vegetable and dairy protein (BCAA)
- Supplements: BCAA supplementation can be considered
- NGF: Patients with grade III - IV HE, who are unable to eat, consider NGF high in BCAA

PATIENT COUNSELLING

- The diet is balanced and includes variety
- Eating a diet with adequate protein and calories is more important than following a very restrictive diet
- Eat regularly (every 2 - 3 hours) and include a bedtime snack
- Reduce your salt intake, however a small amount is allowed for palatability
- Do not reduce your protein intake, your dietitian may advice you to increase your intake of plant proteins and dairy (BCAA)

TAKE HOME MESSAGE

Act proactively to prevent malnutrition - feed early and adequately and avoid unnecessary restrictions