

Department of Health

Nutritional Considerations for Liver Cirrhosis in a Rural / Remote Context

Madie Prendergast – Accredited Practising Dietitian
Alice Springs Hospital





Agenda

1. Why is Nutrition important for patients with Liver Cirrhosis
2. Nutritional Management
3. Case Study
4. Summary



Why is Nutrition important for these patients?

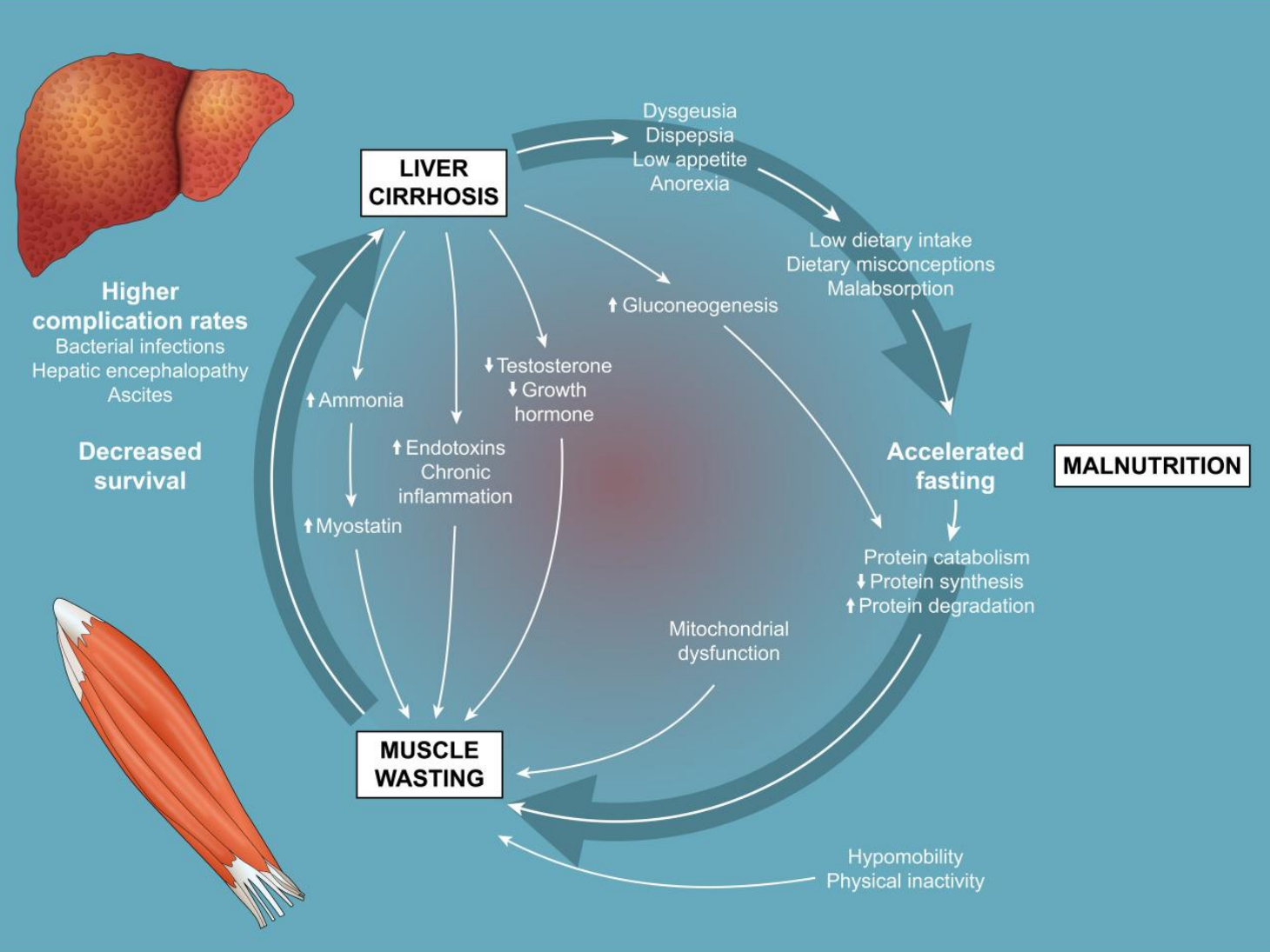
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Hepatology Snapshot: Nutrition in cirrhosis: Dos and Don'ts

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(Merli, 2020)

Muscle mass and Mortality

Systematic Review and Meta-Analysis

Medicine*

OPEN

Association of loss of muscle mass with mortality in liver cirrhosis without or before liver transplantation

A systematic review and meta-analysis

Ke-Vin Chang, MD, PhD^{a,b,c}, Jin-De Chen, MD, PhD^{b,d}, Wei-Ting Wu, MD^a, Kuo-Chin Huang, MD, PhD^{b,e}, Der-Sheng Han, MD, PhD^{a,b,c,f,*}

Abstract

Background: Liver cirrhosis is a risk factor for the loss of muscle mass, which is associated with numerous adverse health outcomes. This meta-analysis aimed to examine whether loss of muscle mass was a predictor of increased mortality in cirrhotic patients without or before liver transplantation.

Methods: Without language restriction, PubMed and Embase were searched for articles published from the earliest records to December 2018 investigating the influence of loss of muscle mass on survival of cirrhotic patients. Those who had undergone liver transplantation and had hepatocellular carcinoma were excluded. The main outcome was the hazard ratio (HR) for the association of mortality with loss of muscle mass, and the secondary outcome was the association of loss of muscle mass with Child-Pugh class and death caused by severe infection.

Results: The meta-analysis included 16 observational studies, comprising 4070 participants. The pooled crude and adjusted HRs for the association of mortality with loss of muscle mass were 2.05 (95% confidence interval [CI], 1.51–2.78) and 2.36 (95% CI, 1.61–3.46). Using Child-Pugh Class A as reference, the odds ratios (ORs) for the association of loss of muscle mass with Child-Pugh Class B and Class C were 1.68 (95% CI, 0.96–2.92) and 1.94 (95% CI, 0.66–5.65). Patients with loss of muscle mass were likely to have infection-related mortality (OR=3.38, 95% CI, 0.61–18.88) but the association did not reach statistical significance.

Conclusions: Loss of muscle mass is associated with mortality in cirrhotic patients without or before liver transplantation. Future studies should be conducted to explore whether exercise and nutritional supplementation can reverse muscle mass loss and improve long-term survival.

Abbreviations: CT = computed tomography, HR = hazard ratio, MELD = Model of End-Stage Liver disease, OR = odds ratio.

Keywords: liver cirrhosis, liver transplantation, mortality, muscle mass, sarcopenia

Nutritional Requirements for Macronutrients

Energy Requirements – 30-35kcal/kgBW (125-146kJ)

Protein Requirements – 1.2-1.5gP/kgBW

An average 70kg patient:

Extra 1.75 – 3.1MJ / day & 28-45gP/day

That is ~

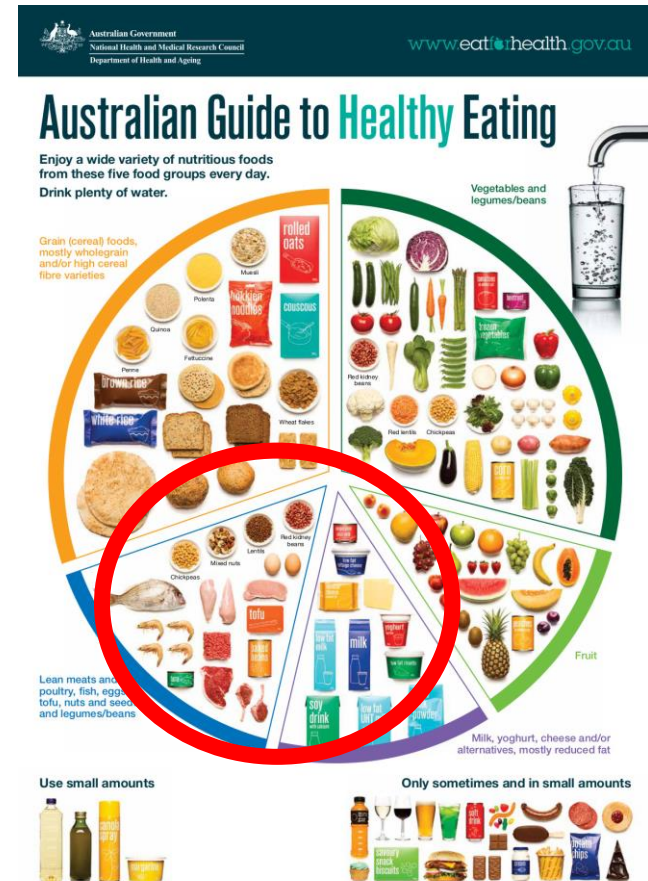
1 serving of Baked beans

1 egg

Cheese & crackers

Nippy's Milk

OR 2-3 Oral Nutrition Supplements



(Bischoff, S.C, et al, 2020)

Nutritional Requirements for Micronutrients – Sodium

Patients with ascites and liver cirrhosis:

Low Sodium Diet Recommendations = 1080mg/day

Risks:

Likely unpalatable diet = lower food consumption = inadequate protein and energy intake = Malnutrition and reduced muscle mass





Important to get Dietitian involvement when prescribing these diets

(Bischoff, S.C, et al, 2020)

Late Evening Snack

Review Article

Effects of Late Evening Snack on Cirrhotic Patients: A Systematic Review and Meta-Analysis

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Background. Energetic effects of late evening snack (LES) on cirrhotic patients were reported recently, but there was no quantitative analysis. In this meta-analysis, we reviewed and quantified the effects of LES on energy metabolism and substrate oxidation in the patients with cirrhosis, which will be of benefit for liver cirrhosis nutritional therapy. **Methods.** A systematic search was conducted in PubMed, Embase, Web of Science, Elsevier, China National Knowledge Infrastructure, and Wanfang Database for relevant trials published until July 2017. These studies statistically were combined and analyzed by RevMan 5.3. **Results.** Fourteen trials comprising 478 cases were eligible for analysis. The results showed that the respiratory quotient value (MD=11.09) and carbohydrate oxidation value (MD=0.05) significantly elevated with one week or with up to three weeks of LES treatment in cirrhotic patients ($P < 0.05$). Meanwhile, the levels of serum albumin (MD=2.98) and cholinesterase (SMD=1.09) were increased with LES administration for three weeks or that lasting twelve weeks ($P < 0.05$). However, there was no significant improvement for the levels of alanine aminotransferase (ALT) ($P = 0.53$), aspartate aminotransferase (AST) ($P = 0.96$), and total bilirubin (TB) ($P = 0.32$). **Conclusions.** LES could improve the energy malnutrition state of cirrhotic patients. However, it may have little effect on reducing liver parenchymal injury indexes such as serum aminotransferase.

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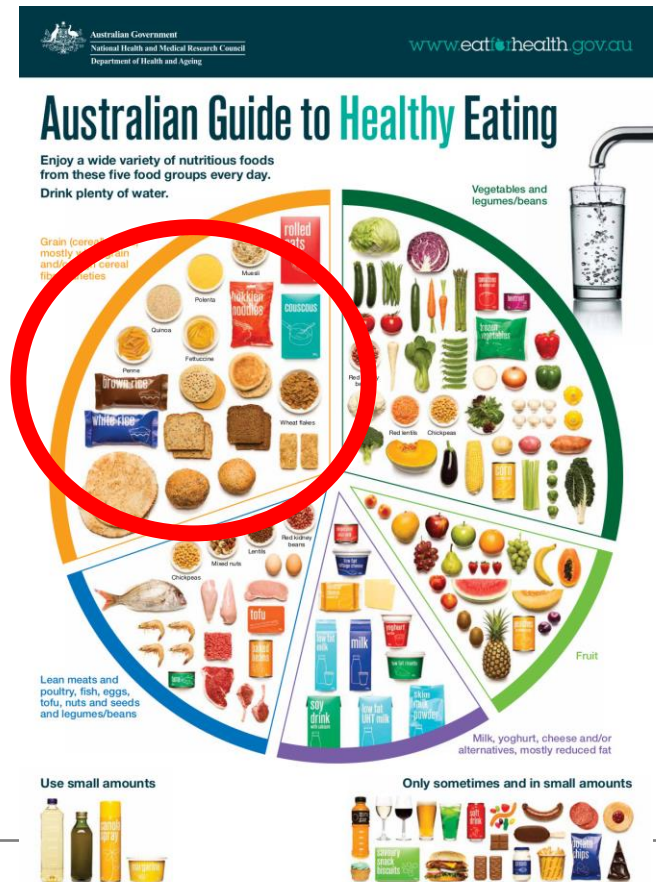
A late evening snack round improves the carbohydrate intake of patients with cirrhosis: A clinical audit

G.A. Gatiss • L.N. Spillman • O.P. Mannion • R.K. Sturgess

DOI: <https://doi.org/10.1016/j.clnesp.2017.07.067>

Examples

50g Carbohydrate (+/- 20g protein) snack prior to sleeping





Consideration of Remote Healthcare

2



Case Study

3

Presentation

77F admitted with coffee-ground vomit on a background of known Child-Pugh B cirrhosis.

PMHx

1. Type 2 diabetes, diagnosed in 2008.
- Chronic kidney disease
3. Child-Pugh B liver cirrhosis secondary to alcohol and hepatitis B.
4. Hypertension.
5. Hypothyroidism.
6. CKD4

Current Issues:

- 1) Upper GI bleed due to variceal bleeding in context of portal hypertension due to liver cirrhosis
- 2) Hepatic encephalopathy
- 3) Hyperglycemia due to T2DM
- 4) Electrolyte abnormalities

Anthropometry

Wt: 43.54kg Ht: 158cm BMI: 19.6kg/m²

Wt hx: 49.6kg (6/52 ago)
48.6kg (9/12 ago)
39.5-56kg (2022-2005)

Physical Ax: severe signs of muscle and fat deficits **SGA-C**.

Son reporting visible LOW recently 2' poor oral intake

12.2% LOW in 2-3/12 unintentionally - significant

Clinical & Social

Clinical

Early Satiety

Anorexia

Poor dentition

Needing scope for UGIB

Social

Usually living in remote community however was in town visiting family when presenting to the hospital

Diet

Home Diet

BF: toast x2 / porridge (**Aged Care**)

L: 50% of the **Aged Care** meal provided

D: Whatever is available – stew / toast / meat

Nil snacks during the day.

Drinking 4-5 cups of tea / day with milk

Lead up to adm only tolerating watery soup and fruit

Satter's Hierarchy of Food Needs



(Satter, 2007)

Nutritional Diagnosis

Severe malnutrition as related to poor appetite and catabolic state (liver cirrhosis) as evidenced by low BMI 19.6kg/m², SGA-C and reduced oral intake (fasting multiple days and poor prior to adm).

Diagnosis and Intervention

Hospital Intervention

BF: Added sustagen to porridge.

Add scrambled egg

MT: custard

L/D: Add sustagen to soup and 2 x
party pies

AT: orange cake

S: **Vanilla Sustagen in milk**

Home Recommendations

1. Small meals regularly
2. F/u in CKD Clinic as able
3. Has milk powder at home –
encouraged to add extra powder to
water with milo at mid-meals and
dessert **with emphasis on the
dessert**

SNACKS



Yoghurt, custard, custard & fruit, yoghurt & fruit



Crackers & cheese, crackers & hummus or peanut butter, unsalted nuts



1 slice bread with baked beans, tuna, cheese, peanut butter



Boiled egg, chicken, tinned tuna

STRONG MILK DRINK

Add 1 Tablespoon of milk powder to 1 cup of milk



ENRICHED MILK RECIPE

250ml or 1-cup full cream milk



+

1 heaped tablespoon of milk powder



Use enriched milk for making drinks and on cereal/porridge



Barriers / Enablers to appropriate nutrition care

Barriers:

- No Dietitian in community to follow up – needing to rely on clinic. We could do Telehealth but patient was not interested in this and prefers F2F
- Aged Care meals were not able to be altered in a therapeutic way
- Food insecurity at dinner time

Enablers:

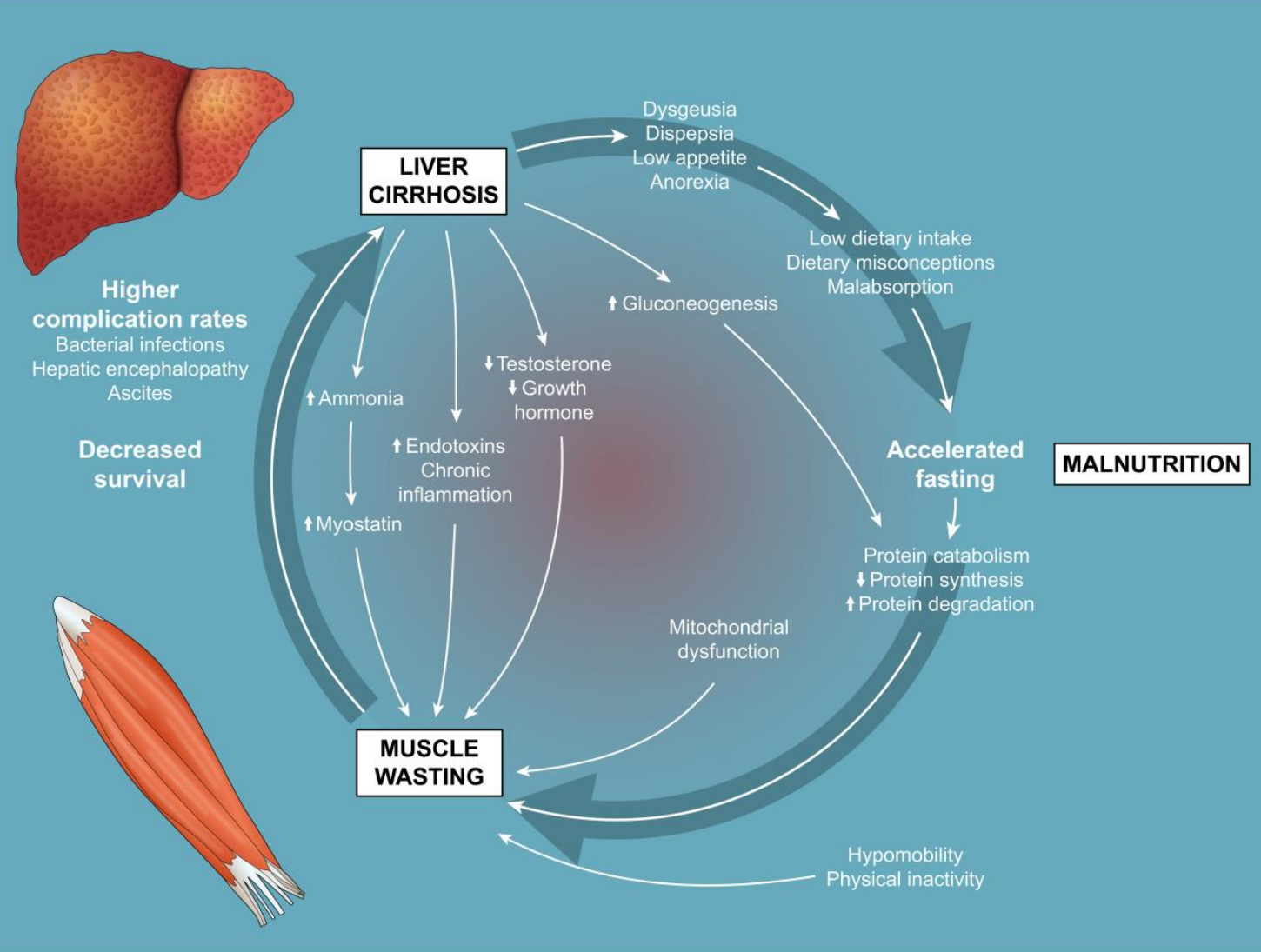
- Supportive family
- Family have a thorough understanding of the importance of HPHE
- Supportive Remote Clinic

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(Merli, 2020)

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Thank you!