META-ANALYSIS AND SYSTEMATIC REVIEW OF NUTRITIONAL SCREENING AND ASSESSMENT TOOLS IN CIRRHOSIS

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Background: Malnutrition is prevalent in patients with cirrhosis and has been shown to predict morbidity and mortality in this population. Many nutritional assessment and screening tools have been described in the literature, which have been studied to varying degrees in patients with cirrhosis.

Aims: In order to inform practice and facilitate the development of an effective nutritional screening tool (NST) in patients with cirrhosis, we aimed to provide an up-to-date meta-analysis and systematic review of the existing literature.

Methods: Pubmed, Embase and Web of Science were searched for articles meeting criteria for inclusion. Inclusion criteria were: 1) Full-text English language articles, 2) Patients with cirrhosis ≥16 years of age, 3) Studies assessing clinical outcomes as predicted by NSTs or nutritional assessment tools (NATs), and 4) Studies measuring validity of NSTs for diagnosing malnutrition. Exclusion criteria were: 1) <75 percent cirrhotic patients, and 2) hepatocellular carcinoma >25%.

Results: After the search, 2831 titles and abstracts were found for review. Of these, 92 articles were identified for full-text examination. After full review, 35 articles were included. Five articles were discovered through the references of included studies, for a total of 40 total studies for analysis. Three studies examined NSTs while 38 of 40 studied NATs. The 2 NSTs investigated were the Royal Free Hospital Nutritional Prioritizing Tool (n=1) and the Nutritional Risk Screening 2002 (n=2). The most prevalent NATs studied were sarcopenia (n=12), BMI (n=6), mid-arm muscle circumference (MAMC) (n=6), phase angle (n=5) and triceps skinfold thickness (TSF) (n=5). In preliminary meta-analysis, MAMC had an odds ratio (OR) for predicting mortality of 4.42 (95% confidence interval (CI) 2.76-7.06, heterogeneity 64%) from 3 studies with a total of 442 patients (figure 1). The mortality OR for TSF (3 studies and 432 patients) was 4.16 (95% CI 2.49-6.95, heterogeneity 3%). For HGS, the ORs for mortality and complications of liver disease (2 studies and 130 patients) were 7.05 (95% CI 1.27-38.97, heterogeneity 0%) and 6.29 (95% CI 2.55-15.53, heterogeneity 29%) respectively. For sarcopenia, the OR for mortality (5 studies and 661 patients) was 2.64 (95% CI 1.82-3.81, 68% heterogeneity) and the OR for post-liver transplant mortality (2 studies and 276 patients) was 6.02 (95% CI 2.43-14.93, 0% heterogeneity).

Conclusions: A large number of studies have been published on NATs in cirrhosis while published data on NSTs is lacking. Although limited studies have meta-analyzable data, preliminary analysis has found MAMC, TSF, HGS and sarcopenia to predict mortality, HGS to predict complications from liver disease and sarcopenia to predict post-liver transplant mortality. Sarcopenia and MAMC had heterogenous results for non-transplant mortality.
Figure 1: Forest plot of MAMC as a predictor of mortality in patients with cirrhosis

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