



STUDY OF PREVALENCE OF FRAILITY IN CHRONIC LIVER DISEASE PATIENTS FROM SOUTH INDIA

Gastroenterology

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ABSTRACT

Frailty is a major prognostic factor in cirrhosis. Its assessment and intervention towards performance enhancement is important in the management of cirrhosis. Our study aimed to assess the prevalence of frailty in patients with cirrhosis and comparison of frailty among compensated versus decompensated cirrhosis patients.

KEYWORDS

Cirrhosis; Frailty; Liver Frailty Index(LFI); Child-Turcotte-Pugh (CTP); Model for End-stage Liver Disease (MELD),Body mass index(BMI)

INTRODUCTION

Frailty is a syndrome defined by diminished strength, endurance, and reduced physiological function that increases vulnerability for developing physical dependency and death [1].Sarcopenia is defined as loss of anatomic muscle mass whereas frailty has been defined as phenotypic manifestation of the loss of muscle function.The prevalence of sarcopenia and frailty in cirrhosis ranges from 40–70%and 18–43%[2,3]. According to United Network for Organ Sharing (UNOS), the Model for End-Stage Liver Disease (MELD) score measures liver disease severity and is currently used to prioritize organ allocation to candidates based on life expectancy over the next three months. However, this score does not take into consideration a patient's overall health and has been proved to be a poor predictor of post transplant mortality[4,5]. Factors such as frailty are not considered in the MELD score, yet have been associated with longer length of stay (LOS), increased number of hospitalizations, and wait-list mortality[5,6].Several studies have reported that frailty increased the threat of hospitalization, waiting list drop-out, and mortality, and dropped the likelihood of liver transplantation. Frailty assessment and intervention towards performance improvement is an important step in the management of liver cirrhosis .The assessment of frailty is done by criteria like fried frailty index, clinical frailty index, short performance physical battery, karnofsky performance scale and liver frailty index. We planned this study to see prevalence of frailty using liver frailty index proposed by Jennifer C Lai et al and compare frailty among compensated and decompensated group . The LFI is a valuable tool for assessing frailty in hepatic patients, as it combines three performance-based evaluations: grip strength of the hand, the duration taken to perform five chair stands, and the duration of maintaining three different balance positions[7]. These objective measures help clinicians predict hospitalizations and mortality risk beyond the MELD score alone[8]. A higher LFI score indicates a greater degree of frailty, and an LFI cut-off of > 4.62 has been identified as the most effective in distinguishing between cirrhotic patients who are at high risk for rehospitalisation within 30 d and those who are not[9]

METHODOLOGY

We conducted a prospective observational study of 200 patients at Stanley hospital Chennai from January 2023 to December 2023 with diagnosis of cirrhosis (clinically and radiologically) between 18 to 65 years of age were recruited and classified as compensated and decompensated. Baseline and routine baseline investigations were done along with calculation of MELD Na and CTP score. Frailty was assessed using liver frailty index (LFI) which includes hand grip strength, age, time to do chair stands and position balance on an online calculator available at <http://liverfrailtyindex.ucsf.edu>. LFI score of more than 4.5 was considered as frail

confidence interval ,p value <0.05 was considered statistically significant.

RESULTS

Mean age of study population was 43.57 ± 10.16 years, and 80% were males. Mean body mass index was 20.4 ± 3.1 kg/m² among frail and among non frail was 21.2 ± 2.8 kg/m² (p=0.032). Most common etiology associated with cirrhosis was alcohol (50.1%) followed by NASH and viral related. Most common decompensation seen was ascites in 70 patients out 100 patients in decompensated group followed by gastrointestinal bleed. Prevalence of frailty based on LFI >4.5 was 38%(76 out of 200 patients) among the study population. In compensated CLD group frailty was seen in 18 of 100 patients (18%) while in patients of decompensated CLD frailty was seen in 58 out of 100 patients (58%) (p value <0.001) (graph 1)

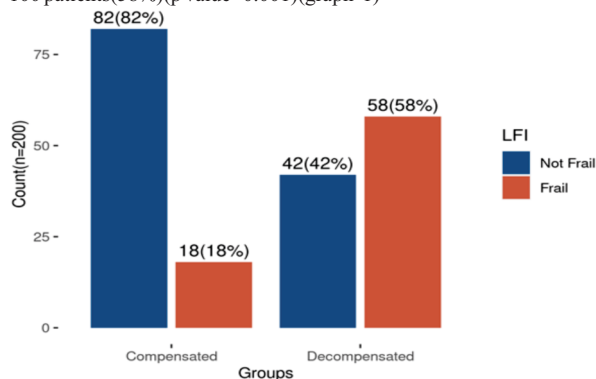


Fig 1

Mean MELD-Na,CTP score among non frail group was 16.2 ± 4.5 and 7.2 ± 4.3 and among frail group was 20.6 ± 4.3 and 9.4 ± 8.1 (p <0.001).Multivariate logistic regression used to find the combined effect of MELD-Na and BMI ,showed significant correlation positive with MELD Na with odds ratio 1.23 and negative correlation with odd of 0.89 for BMI.(Fig 2)

LFI: OR (95% CI, p-value)

MELDNa 1.23 (1.15-1.33, p <0.001)

BMI 0.89 (0.79-0.99, p=0.032)

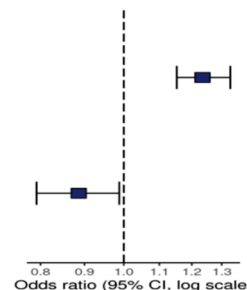


Fig 2

Statistical Analysis

Analysis done using R software version 4.3. Prevalence was expressed in percentage. Univariate logistic regression was used to evaluate the odds ratio for individual groups, multivariate logistic regression was used to find the combined effect of MELD-Na and BMI. With 95% of

DISCUSSION

In a western study by *Tandon.et.al* ., prevalence of frailty was 18% among 300 studied cirrhotic patients[10]. Our study is one of the few study from south Indian tertiary care setup to study the prevalence of frailty among cirrhosis patients. Our study showed a higher prevalence of frailty (38%) in liver cirrhosis based on LFI. The difference in prevalence could be the population evaluated, the methods of assessment, and the operational definitions used. Higher prevalence of frailty could also be due to the low socioeconomic status, poor nutrition, and late referral of patients to the hospital in developing countries compared to the West. Our study also showed that frailty was higher (58%) among decompensated group compared to compensated CLD (18%). Similar results were seen in study by *Cron et al.*, decompensated group had 61% frail patients[11]. In our study high MELD-Na (20.6 vs 16.2) score and CTP score and low BMI were significantly associated with frailty. These findings are in concordance with Singh S et al[12]. However, *Bhanji.et.al.*, 2019 did not report any significant difference of CTP and MELD score between frail and non-frail patients[13]. One major strength of our study was we included all patients with cirrhosis meeting the inclusion criteria rather than those awaiting for liver transplantation as in majority of other studies where LFI has been used. Frailty is prevalent in patients with cirrhosis affecting their overall morbidity, mortality and liver transplant outcome. Use of screening scales like LFI can be beneficial in identifying such patients early and preventing further complications and early transplant.

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