

THE EFFICACY OF 12-WEEK SUPERVISED HOME-BASED EXERCISE AND BRANCHED-CHAIN AMINO ACIDS SUPPLEMENTATION FOR TREATMENT OF SARCOPENIA IN CIRRHOTIC PATIENTS: A PROSPECTIVE PILOT STUDY.

Authors

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Background and Aim:

Sarcopenia is associated with an increase in morbidity and mortality in cirrhosis. This study aimed to evaluate the efficacy of 12-week supervised home-based exercise and branched-chain amino acids (BCAAs) supplementation in cirrhotic patients with sarcopenia.

Methods:

This prospective pilot study enrolled compensated cirrhotic patients with sarcopenia defined by gender specific L3 skeletal muscle index (SMI) cut-offs (<42 for men and <38 for women). All participants received a tailored 12-week home-based exercise program supervised by sport scientists included: (1) aerobic walking exercise (>5,000 steps/day monitored by personal activity tracker), and (2) progressive full-body resistance training (30 minutes/day, at least 5 sessions/week). After the first 1:1 face-to-face training session, participants were provided with training videos and monitored for compliance by mobile calls/applications at least 3 times/week throughout the study period. Individualized dietary counselling by

nutritionists and once-daily BCAAs supplementation (210 kcal, protein 13.5 g, BCAA 2.03 g) were given to all patients. The primary outcome was changes in SMI and psoas muscle index (PMI) at L3 evaluated by CT. Secondary outcomes were aerobic fitness evaluated by six-minute walk test (6MWT), cardiopulmonary exercise test (CPET), and functional capacity evaluated by liver frailty index (LFI).

Results:

15 patients were enrolled and 12 patients who had >80% adherence rate to the study protocol were included for final analysis (age 63.3±4.2 years, female 58%, HCV/alcohol 33%/33%, BMI 30.7±20.3 kg/m², MELD 8.5±1.6, Child A 91.7%). At week 12, there was a significant increase in SMI at L3 level (37.6±2.2 vs. 44.5±3 cm²/m², P<0.001); PMI at L3 level (4.6±1.7 vs. 6.1±1.8 cm²/m², P=0.002). Notably, 11/12 (91.7%) of participants had sarcopenia resolution. In addition, there were a significant increase in 6MWT distance (372.5±58.2 vs. 442.5±78.7 m., P=0.002), LFI (4.16±0.4 vs. 3.71±0.4, P<0.001) and hand-grip strength (23.07 ± 8.1 vs. 26.23 ± 7.9 kg., P=0.047). No significant changes in CPET parameters, MELD and MELD-Na were observed. There was no major intervention-related adverse event was found.

Conclusion:

A 12-week supervised home-based exercise program and BCAA supplementation was effective for the treatment of sarcopenia in cirrhotic patients. This intervention also resulted in an improvement in functional capacity in these patients.