

Sarcopenia Pre- and Post-liver Transplantation: Implication for Hepatic Encephalopathy

Mimosa Nguyen, RD, MSc¹, Geneviève Huard, MD¹, An Tang, MD¹, Christopher F. Rose, PhD¹, Chantal Bemeur, RD, PhD¹.

¹*Université de Montréal, Montreal, QC, Canada.*

BACKGROUND: Muscle wasting (sarcopenia) and hepatic encephalopathy affect 30 to 70% of cirrhotic patients. The presence of sarcopenia may be associated with a worst prognosis and complications, including hepatic encephalopathy, in cirrhotic patients awaiting and after liver transplantation (LT). To this day, few studies have evaluated and followed muscle mass (in terms of quantity and quality) after LT. The goal of this study was to assess the association between the evolution of sarcopenia and the prognosis of cirrhotic patients, including hepatic encephalopathy and neurological complications, before and after LT.

METHODS: In total, 94 cirrhotic patients who underwent LT at the Montreal University Hospital Center - Liver Unit were included. Sarcopenia was assessed at the third lumbar level vertebrae using a computed tomography scan (CT-scan). The diagnostic of sarcopenia was based on previously established sex-specific cut-off values of skeletal muscle index. Patients were classified into two groups: (1) persistent or newly developed sarcopenia after LT (Sarc1); (2) resolved sarcopenia or absence of sarcopenia before and after LT (Sarc-). Muscle quality (myosteatosis) was assessed by calculating intramuscular adipose tissue content. The prognostic factors were collected 6 months before and during 1 year after LT through medical records and included the number of complications, the presence of hepatic encephalopathy and the episodes of infections, the length of stay, and the frequency of readmissions.

RESULTS: Sarcopenia persisted or was newly developed (Sarc1) in 62% of the patients (n = 58). It remained absent or was resolved after LT in 38% of the patients (n = 35). Muscle quality was significantly decreased post-LT ($P = 0.034$). The group Sarc1 experienced more complications pre-LT ($P = 0.012$) and post-LT ($P = 0.001$), infections post-LT ($P = 0.006$) and readmissions ($P = 0.048$) compared to the group Sarc-. The length of stay was longer for the group Sarc1 as opposed to the group Sarc- ($P = 0.001$). Hepatic encephalopathy was present in 83% of patients pre-LT whereas 17% experienced persistent neurological complications post-LT.

CONCLUSIONS: Persistent and newly developed sarcopenia after LT appear to have negative outcomes on the prognosis of patients. Interventional strategies to optimize, increase or preserve muscle mass could help to improve post-operative recovery as well as the quality of life in patients who have undergone LT.