

PREVALENCE AND RISK FACTORS OF SARCOPENIA THROUGHOUT THE DISEASE SPECTRUM OF SYMPTOMATIC POLYCYSTIC LIVER DISEASE: A RETROSPECTIVE MULTICENTRE COHORT STUDY. N. Van Horebeek (1), O. Koc (2), W. Coudyzer (3), A. Billiet (4), I. Colle (5), F. Janssens (6), S. Demaeght (7), H. Orlent (8), J. Delwaide (9), S. Decock (10), C. Devloo (11), S. Francque (12), C. Moreno (13), D. Sprengers (14), D. Monbaliu (15), J. Pirenne (15), F. Nevens (2), J. Verbeek (2) / [1] University Hospitals Gasthuisberg, Leuven and KU Leuven, Leuven, Belgium, Gastroenterology and Hepatology, [2] University Hospitals Gasthuisberg, Leuven and KU Leuven, Leuven, Belgium, Gastroenterology and Hepatology, [3] University Hospitals Gasthuisberg, Leuven and KU Leuven, Leuven, Belgium, Radiology, [4] AZ Oostende, Oostende, Belgium, Gastroenterology and Hepatology, [5] AZORG AALST, Aalst, Belgium, Gastroenterology and Hepatology, [6] Jessa Hospital, Hasselt, Belgium, Gastroenterology and Hepatology, [7] Grand Hopital de Charleroi, Charleroi, Belgium, Gastroenterology and Hepatology, [8] AZ Sint-Jan Brugge, Brugge, Belgium, Gastroenterology and Hepatology, [9] CHU Liege, Liège, Belgium, Gastroenterology and Hepatology, [10] AZ Sint-Lucas Brugge, Assebroek, Brugge, Belgium, Gastroenterology and Hepatology, [11] AZ Delta, Belgium, Gastroenterology and Hepatology, [12] Antwerp University Hospital, Edegem, Belgium, Gastroenterology and Hepatology, [13] Hôpital Erasme, ULB, Belgium, Gastroenterology and Hepatology, [14] ZAS, Antwerp, Belgium, Gastroenterology and Hepatology, [15] University Hospitals Gasthuisberg, Leuven and KU Leuven, Leuven, Belgium, Abdominal Transplant Surgery and Coordination.

Introduction: The severity of symptoms and the presence of complications such as malnutrition are key indications for volume-reducing treatment (including liver transplantation (LTx)) in patients with polycystic liver disease (PLD). Malnutrition in this population is traditionally assessed using the mid-upper arm circumference (MUAC), although the skeletal muscle index at the third lumbar vertebra (SMI-L3) on computed tomography is increasingly recognized as a more accurate marker. Recently, the United Network for Organ Sharing in the United States accepted sarcopenia as a standard exception criterion for liver transplantation. However, the prevalence and risk factors of sarcopenia in symptomatic PLD remain unclear.

Aim: This study aimed to (1) determine the prevalence of sarcopenia in patients with PLD, (2) identify clinical predictors of sarcopenia, and (3) assess whether sarcopenia independently predicts the need for volume-reducing therapy.

Methods: This multicentre retrospective cohort study included 296 adult patients with symptomatic PLD, either isolated or associated with autosomal dominant polycystic kidney disease (ADPKD). Sarcopenia was defined using SMI-L3 on CT: $<39 \text{ cm}^2/\text{m}^2$ for females and $<50 \text{ cm}^2/\text{m}^2$ for males. Reference values for MUAC were $<23.1 \text{ cm}$ for females and $<23.8 \text{ cm}$ for males. Additional variables included demographics, presence of ADPKD, BMI, height-adjusted total liver volume (htLV), symptom severity (POLCA score), creatinine levels and Charlson Comorbidity Index. Associations between sarcopenia and therapeutic needs (somatostatin analogue, surgical intervention, or LTx) were assessed using univariate tests and multivariable logistic regression adjusting for confounders (age, sex, BMI, ADPKD, malnutrition, POLCA score, htLV, creatinine levels and Charlson Comorbidity Index).

Results: Patients were mostly female (82.4%) with a median age of 54 years. The majority of PLD patients (216/296; 73.0%) had ADPKD. SMI-L3 data were available for 137/296 (46.3%) patients of whom 80 (58.3%) had sarcopenia. Patients with and without sarcopenia showed no significant differences in median age (50 ± 16 vs 51 ± 17 years, $p = 0.937$), prevalence of ADPKD (83.8% vs 84.2%, $p = 0.942$), malnutrition assessed by MUAC value (39.4% vs 32.6%, $p = 0.463$), total POLCA score (22 ± 18 vs 20 ± 17), htLV ($2667 \pm 1675 \text{ mL}$ vs $2539 \pm 2048 \text{ mL}$), or Charlson Comorbidity Index ($2 + 3$ vs $3 + 4$, $p\text{-value} = 0.237$). There was a significant difference in BMI ($22 + 4$ vs $24 + 5 \text{ kg}/\text{m}^2$, $p\text{-value} = 0.009$) and creatinine levels ($1.01 + 0.63$ vs $1.14 + 3.05 \text{ mg}/\text{dL}$, $p\text{-value} = 0.040$) among patients with and without sarcopenia. In multivariable analysis, only BMI (OR: 0.812, CI 0.695 – 0.948, $p\text{-value} = 0.008$) was an independent predictor for the presence sarcopenia. The overall need for volume-reducing therapy was high (86.8%): somatostatin analogue (46.7%), resection/sclerotherapy (11.0%), and LTx (126/269, 42.6%) (multiple treatments were possible). After multivariable adjustment, sarcopenia independently predicted the need for volume-reducing therapy (OR 8.49, 95% CI 1.53–53.39, $p\text{-value} = 0.018$), alongside htLV (OR 1.001, $p\text{-value} = 0.038$) and Charlson Comorbidity Index (OR 2.56, $p\text{-value} = 0.033$).

Conclusions: Sarcopenia is highly prevalent in patients with symptomatic PLD. Together with htLV sarcopenia predicts the need for volume-reducing therapy, whereas MUAC does not. Therefore, we recommend prioritizing sarcopenia measured by CT based L3-SMI over MUAC in the follow up and management of PLD patients, especially in determining transplant eligibility.