

Cross-sectional assessment of body composition and muscle function in Crohn's disease patients, stratified by presence and extent of intestinal resection

G. Becherucci¹, L. Parisio¹, F. Profeta¹, E. Foscarini¹, A. Del Gaudio¹, J. Iaccarino², F. Di Vincenzo¹, C. Covello², B. Rondinone¹, S. Distante¹, M. Pizzoferrato³, V. Petito⁴, L. Masi⁴, S. Troisi⁴, C. Pane⁴, V. Calvez¹, L. Laterza¹, C. Marmo¹, I. Mignini¹, P. Puca¹, L. Turchini¹, V. Amatucci¹, L.N. Giordano¹, M.C. Mentella¹, L.R. Lopetuso¹, A. Gasbarrini⁵, A. Papa⁵, F. Scaldaferri¹

1 Fondazione Policlinico A.Gemelli IRCCS- IBD Unit- Digestive Disease Center CeMAD, Dipartimento di Scienze Mediche e Chirurgiche, Rome, Italy

2 Fondazione Policlinico A.Gemelli IRCCS- Università Cattolica del Sacro Cuore, Rome, Italy,

3 Fondazione Policlinico A.Gemelli IRCCS- UOC Gastroenterologia, Dipartimento di Scienze Mediche e Chirurgiche, Rome, Italy

4 Fondazione Policlinico A.Gemelli IRCCS- CeMAD Translational Research Laboratories- Digestive Disease Center CeMAD, Dipartimento di Scienze Mediche e Chirurgiche, Rome, Italy

5 Fondazione Policlinico Universitario Gemelli IRCCS, Università' Cattolica Internal Medicine, Gastroenterology and Liver Diseases, Rome, Italy

BACKGROUND AND AIMS: Crohn's disease (CD) is a leading cause of short bowel syndrome (SBS) in adults, which can result in intestinal failure (IF) when intravenous nutritional or electrolyte supplementation is required. SBS is frequently associated with sarcopenia, characterized by loss of muscle mass and function, which adversely impacts quality of life and increases the risk of complications. This study aimed to evaluate differences in body composition and muscle strength among CD patients at varying risk levels for SBS.

METHODS: We conducted a cross-sectional study involving consecutive CD outpatients. The participants were divided into two groups. Group A consisted of CD patients diagnosed with SBS and patients who had undergone two or more bowel resections, or a resection of more than 50 cm. Group B included patients who had never undergone surgery or those who had undergone a resection of less than 50 cm. Body composition was assessed using bioimpedance analysis (BIA), and muscle strength was measured via hand grip testing with a dynamometer, recording the best result of three attempts with the dominant hand. We administered food frequency questionnaire (FFQ) to assess eating habits. Statistical

analyses, including t-tests or Mann-Whitney tests, were used as appropriate, with a significance threshold of $p < 0.05$.

RESULTS: The study cohort included 150 patients (mean age 53 years [$\pm 19,2$]; 24% female). Group A showed an average BMI of $23,7 \pm 4$ kg/m², whereas group B showed an average BMI of 24.6 ± 5 kg/m². Muscle strength measured between groups was reduced in group A showing significant differences in hand grip test compared to group B (p-value < 0.001). However, no significant differences were observed in BIA parameters, including muscle mass, or in eating habits across the groups.

CONCLUSIONS: Our study revealed that SBS patients and CD patients resected two or more times or with a resection greater than 50 cm had reduced muscle strength without a corresponding reduction in muscle mass, indicating impaired muscle function. Further research is needed to better understand the relationship between Crohn's disease-related resections and their impact on both muscle quality and quantity.

Funded by: 2.1 "Rafforzamento e potenziamento della ricerca biomedica del SSN", finanziato dall'Unione europea—NextGenerationEU, CUP C53C22001140007. 2022 PNRR Project "Changing the future of intestinal failure in intestinal chronic inflammation: towards innovative predictive factors and therapeutic targets" code: PNRR-MAD-2022-12376791