THE HIDDEN BURDEN OF SARCOPENIA IN INFLAMMATORY BOWEL DISEASE: A STRONG AND EARLY PREDICTOR OF DISEASE RELAPSE AND COMPLICATIONS

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Background/Aims:

Sarcopenia is an emerging predictor of adverse outcomes in inflammatory bowel disease (IBD). We evaluated its prevalence and prognostic impact in a prospective IBD cohort.

Methods:

Consecutive IBD patients were prospectively enrolled at an Italian tertiary referral centre (April 2023–August 2024). Sarcopenia was defined according to EWGSOP2 criteria using handgrip strength and fat-free mass index(FFMI) assessed by bioelectrical impedance analysis (BIA). Patients were classified as non-sarcopenic, probable, or confirmed sarcopenic. We also evaluated disability scores, quality of life and serum inflammatory biomarker. Patients were followed for a median time of 12 months. Clinical outcomes included disease relapse, IBD-related hospitalization, surgery and infectious complications. Univariable and multivariable logistic regression analyses were performed to identify independent predictors of outcomes.

Results:

We enrolled 113 IBD patients [65 with CD and 48 with UC, median age: 38 years].Table 1. Among the study population, 53.1% of patients were classified as non-sarcopenic, 38.9% as having probable sarcopenia, and 8.0% as having confirmed sarcopenia. Sarcopenia was significantly associated with impaired nutritional status, with a progressive increase in high malnutrition risk across groups ($p<0.001$). Baseline disease activity indices were comparable among groups. Median CRP levels

differed significantly according to sarcopenia status, with higher values observed in patients with confirmed sarcopenia compared to non-sarcopenic cases (4.50 [IQR 4.00–7.80] vs 3.00 [2.00–4.00]mg/L),while patients with probable sarcopenia showed more variable values (2.00[1.00–10.50] mg/L)(p=0.04). No significant differences were observed in serum albumin levels, in disability scores, quality of life, extra-intestinal manifestations, or use of biologic therapy among groups.

After a median follow-up of 12 months, a stepwise increase in adverse outcomes was observed according to sarcopenia status. Patients with probable and confirmed sarcopenia showed higher rates of disease relapse compared with non-sarcopenic patients (63.6%and 88.9% vs 31.7%),hospitalization (22.7%,44.4% vs1.7%),and infectious complications(18.2% and44.4% vs 1.7%) (all p<0.001).Surgery was also more frequent in sarcopenic patients(p=0.003).In multivariable analysis, both probable and confirmed sarcopenia were independently associated with disease relapse (OR 4.14,95% CI 1.72–10.50;OR 19.49, 95% CI 2.77–406.71, respectively), IBD-related hospitalization (OR21.56, 95%CI 3.65–415.65; OR56.47, 95%CI 6.00–1338.68), and infections (OR 11.34, 95% CI 1.90–217.57; OR 52.97, 95% CI 5.84–1241.66).Figure 1.

Conclusion:

Probable sarcopenia in addiction to confirmed sarcopenia, independently predicts adverse clinical outcomes in IBD, even at initial stages, emphasizing its early prognostic relevance. These findings support incorporation of sarcopenia assessment into routine risk stratification.

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Table 1. Overall and sarcopenia-stratified characteristics of the study population according

Variabile	Overall (n=113)	Non sarcopenia (n=60)	Probable sarcopenia (n=44)	Confirmed sarcopenia (n=9)	p
Median age, y (IQR)	38.00 (26.00, 57.00)	39.50 (28.75, 57.25)	36.50 (23.75, 63.00)	31.00 (22.00, 46.00)	0.46
Female sex, n (%)	59 (52.2)	27 (45.0)	27 (61.4)	5 (55.6)	0.25
Surgery for IBD, n (%)	47 (41.6)	27 (45.0)	14 (31.8)	6 (66.7)	0.114
Crohn's disease, n (%)	65 (57.5)	37 (61.8)	21 (47.7)	7 (77.8)	0.18
Behaviour, n (%)					0.212
B1	12 (18.5)	7 (18.9)	5 (23.8)	0 (0.0)	
B2	31 (47.7)	18 (48.6)	11 (52.4)	2 (28.6)	
B3	22 (33.8)	12 (32.4)	5 (23.8)	5 (71.4)	
Location, n (%)					0.547
L1	17 (26.2)	11 (29.7)	4 (19.0)	2 (28.6)	
L2	8 (12.3)	4 (10.8)	2 (9.5)	2 (28.6)	
L3	40 (61.5)	22 (59.5)	15 (71.4)	3 (42.9)	
Ulcerative colitis, n (%)	48 (42.5)	23 (38.3)	23 (52.3)	2 (22.2)	
Extension					0.191
E1	7 (14.6)	4 (17.4)	2 (8.7)	1 (50.0)	
E2	24 (50.0)	9 (39.1)	15 (65.2)	0 (0.0)	
E3	17 (35.4)	10 (43.5)	6 (26.1)	1 (50.0)	
Mean HBI score (SD)	5.95 (2.78)	5.62 (2.14)	6.33 (3.41)	6.57 (3.82)	0.539
Mean pMAYO score (SD)	4.69 (2.63)	4.96 (2.87)	4.26 (2.45)	6.50 (0.71)	0.418
Clinical activity, n (%)	85 (79.4)	44 (81.5)	34 (77.3)	7 (77.8)	0.870
Ultrasound activity, n (%)	55 (48.7)	31 (51.7)	19 (43.2)	5 (55.6)	0.632
Mean SES-CD (SD)	6.29 (5.62)	5.86 (3.98)	6.10 (6.80)	9.14 (8.80)	0.367
Mean MES (SD)	1.88 (0.87)	2.00 (0.80)	1.78 (0.95)	1.50 (0.71)	0.582
Endoscopic activity, n (%)	84 (74.3)	49 (81.7)	28 (63.6)	7 (77.8)	0.112
Median albumin, g/L (IQR)	4.10 (3.80, 4.30)	4.10 (3.88, 4.22)	4.05 (3.80, 4.40)	3.70 (3.60, 4.40)	0.871
Median CRP, mg/L (IQR)	3.00 (2.00, 6.10)	3.00 (2.00, 4.00)	2.00 (1.00, 10.50)	4.50 (4.00, 7.80)	0.04
Median calprotectin, mcg/g (IQR)	89.00 (40.00, 372.00)	90.50 (49.00, 396.75)	94.00 (39.50, 333.00)	40.00 (17.00, 1000.00)	0.721
Median adiponectin, µg/mL (IQR)	18.4 (14.821.9)	19.2 (5.5-22.9)	18.2 (14.8-21.6)	16.6 (11.8-21.3)	0.42
EIMs, n (%)	38 (33.6)	20 (33.3)	14 (31.8)	4 (44.4)	0.764
Type of EIMs, n (%)					0.271
Joint	31 (27.4)	17 (28.3)	12 (27.3)	2 (22.2)	
Skin	5 (4.4)	2 (3.3)	1 (2.3)	2 (22.2)	
Eye	2 (1.8)	1 (1.7)	1 (2.3)	0 (0.0)	
None	75 (66.4)	40 (66.7)	30 (68.2)	5 (55.6)	
Bio failure, n (%)	41 (36.3)	19 (31.7)	19 (43.2)	3 (33.3)	0.474
Biologic therapy, n (%)	63 (55.8)	36 (60.0)	22 (50.0)	5 (55.6)	0.598
Therapy type, n (%)					0.804
Anti-TNF-alpha	31 (27.4)	15 (25.0)	14 (31.8)	2 (22.2)	
JAKi	7 (6.2)	4 (6.7)	2 (4.5)	1 (11.1)	
UST	14 (12.4)	7 (11.7)	6 (13.6)	1 (11.1)	

VDZ	15 (13.3)	11 (18.3)	3 (6.8)	1 (11.1)	
Mean BMI, kg/m^2 (SD)	24.54 (5.21)	26.19 (4.10)	22.63 (5.21)	22.84 (8.16)	0.001
Mean IBD-DI (SD)	43.95 (12.09)	44.93 (12.68)	42.23 (11.24)	45.78 (12.45)	0.478
Mean IBD-Disk (SD)	40.35 (24.93)	41.13 (26.99)	37.25 (22.82)	50.33 (18.97)	0.339
Moderate-to-severe disability, n (%)	52 (46.0)	29 (48.3)	17 (38.6)	6 (66.7)	0.267
Mean IBDQ (SD)	46.81 (12.25)	47.48 (12.12)	47.20 (12.41)	40.33 (11.83)	0.256
Malnutrition risk, n (%)	37 (32.7)	6 (10.0)	23 (52.3)	8 (88.9)	<0.001
MEDI-lite adherence	99 (87.6)	55 (91.7)	37 (84.1)	7 (77.8)	0.331

Abbreviations: IQR, interquartile range; SD, standard deviation; IBD, inflammatory bowel disease; CD, Crohn's disease; UC, ulcerative colitis; HBI, Harvey–Bradshaw Index; pMAYO, partial Mayo score; SES-CD, Simple Endoscopic Score for Crohn's Disease; MES, Mayo Endoscopic Subscore; EIMs, extraintestinal manifestations; BMI, body mass index; IBD-DI, Inflammatory Bowel Disease Disability Index; IBD-Disk, Inflammatory Bowel Disease Disability Disk; IBDQ, Inflammatory Bowel Disease Questionnaire; JAKi, Janus kinase inhibitors; UST, ustekinumab; VDZ, vedolizumab.

Figure 1. Results