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Functional Performance Differences Between Patients With Advanced Colorectal Cancer Before Chemotherapy and Age-Matched Older Adults: A Comparative Cross-Sectional Analysis Using Handgrip Strength, Timed Up and Go, and Sit-to-Stand Tests

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Background
Aging is associated with progressive declines in muscle strength and mobility, which may be exacerbated in individuals with cancer due to disease-related systemic inflammation, metabolic dysregulation, and accelerated muscle catabolism. In colorectal cancer, tumor-driven cytokine activity, decreased nutritional intake, and reduced habitual physical activity may further compromise muscle strength and mobility even before treatment begins. Evaluating baseline physical function is clinically relevant, as diminished neuromuscular capacity prior to chemotherapy is associated with higher risk of treatment toxicity, delayed recovery, hospitalization, and reduced overall survival.
Aim
To compare baseline functional performance between older adults with advanced colorectal cancer awaiting chemotherapy and age-matched older adults without cancer.
Methods
In this cross-sectional study, older adults were allocated into two groups: colorectal cancer group (CRC – stages III and IV; n=10; 62.8 + 10.9 years) and non-cancer control group (NCG; n=8; 67.125 + 4.35 years). Maximal handgrip strength was assessed using a standardized dynamometry protocol. Functional mobility was measured with the Timed Up and Go (TUG) test, and lower-limb function with the 30-second Sit-to-Stand (STS) test. Group comparisons were performed using appropriate parametric or non-parametric tests ($p<0.05$).
Results
Significant differences were observed in handgrip strength ($p=0.0266$) and TUG ($p<0.0003$) performance. The CRC group exhibited lower handgrip values (CRC = 27.93 + 6.915; NCG = 21.43 + 3.234) and longer TUG times (CRC = 11.91 + 2.558; NCG = 7.218 + 1.418) compared to the NCG, indicating impairments in muscle force and mobility. No significant differences were found for STS performance (CRC = 11.20 + 3.011; NCG = 10.02 + 1.727; $p=0.3904$).
Conclusion
Older adults with colorectal cancer demonstrate reduced baseline functional capacity, particularly in strength and mobility, reinforcing the importance of objective functional screening before chemotherapy. Early identification of deficits may support individualized exercise-based interventions aimed at enhancing treatment tolerance and clinical outcomes.

Keywords

Exercise; Physical Activity; Neoplasms; Colon.

Conflict of Interest & Ethical Approval

yes

Abstract submitters declaration

yes

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