New Evidence on Importance of Muscle Health in People with Cancer

Results of new study find muscle quality significantly correlates with symptom burden, healthcare utilization, and survival.

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New research in the March 2021 issue of JNCCN—Journal of the National Comprehensive Cancer Network from Mass General Hospital Cancer Center, Harvard Medical School, and Dana-Farber Cancer Institute finds muscle mass (quantity) correlated with survival, while muscle radiodensity (quality) was associated with symptom burden, healthcare use, and survival in patients with advanced cancer undergoing an unplanned hospitalization. The researchers also found nearly two-thirds of the patients in that population had significant muscle loss (sarcopenia), and that those with a higher body mass index (BMI) tended to have lower muscle quality despite higher quantity. They highlight the need for additional work to continue investigating how best to utilize computerized tomography (CT) scans to measure muscle mass and density to improve clinical outcomes.

“We hope that our work leads to future efforts for assessing patients’ muscle health—potentially using CT scans—as a strategy for identifying patients who may benefit from fitness or nutrition interventions, in order to enhance clinical outcomes,” said lead researcher Ryan D. Nipp, MD, MPH, Mass General Hospital Cancer Center and Harvard Medical School. “These findings build upon existing research showing unfavorable outcomes associated with poor muscle health in cancer patients, while also underscoring the added utility of assessing muscle radiodensity to measure muscle health. Muscle radiodensity provides information on the amount of intramuscular adipose tissue (fatty tissue within the muscle), and our findings suggest that higher BMI may contribute to that infiltration, resulting in lower muscle radiodensity.”

The researchers evaluated muscle data from the CT scans of 677 patients with advanced cancer who had an unplanned hospitalization between September 2014 and May 2016. The CT scans were performed as part of routine clinical care within 45 days before study enrollment, and results were compared against clinical outcomes as well as patient reported psychological assessments. Findings showed older, female patients tended to have lower muscle mass and radiodensity. Sixty-four percent of patients met the criteria for sarcopenia. Higher muscle radiodensity was significantly associated with better patient outcomes—including lower physical symptom burden and less depression and anxiety. However, it remains unclear whether poorer muscle radiodensity was a result of other symptoms that limit mobility, or vice versa.

“It’s possible that lower muscle radiodensity could lead to functional decline, and thus exacerbates physical and psychological symptoms,” said Dr. Nipp, who was a recipient of an NCCN Foundation® Young Investigators Award in 2016 for research on perioperative geriatric care intervention for older patients with gastrointestinal cancers undergoing surgical resection. “Conversely, patients with a higher symptom burden could have lower physical activity, which could have an effect on their muscle quality and quantity.”

“Increasing the quality of one’s weight through muscle development could be more important than simply trying to regain body weight to address cancer-related sarcopenia,” commented Scott J. Capozza, PT, MSPT, Board Certified Clinical Specialist in Oncologic Physical Therapy, Smilow Cancer Hospital and Yale Cancer Center, who was not involved with this research. “Skilled clinicians, such as oncology certified dietitians and physiotherapists, are able to develop evidence-based interventions to safely increase the quality of muscle mass. Having dietitians and physiotherapists included in the care team aligns with recommendations in the NCCN Guidelines for Survivorship. I look forward to future studies where these clinicians can be incorporated to address the quality of life and overall survival of patients with advanced cancers through nutrition, exercise, and physical rehabilitation.”

To read the entire study, visit JNCCN.org. Complimentary access to “Associations of Skeletal Muscle With Symptom Burden and Clinical Outcomes in Hospitalized Patients With Advanced Cancer” is available until June 10, 2021.

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