New Tool for Assessing Frailty Predicts Survival in Newly Diagnosed Multiple Myeloma

Frailty index may inform treatment decision-making for older patients by incorporating functional and quality of life factors versus chronological age alone

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ASCO Perspective

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"We know that older patients with multiple myeloma and other cancers are at higher risk for complications of treatment, but the frailty index takes into account more than just chronological age. Knowing this information can help oncologists have more informed discussions with patients about their prognosis, which in turn can empower patients and families as they weigh treatment options."

A new “frailty index” predicts overall survival for patients newly diagnosed with multiple myeloma, according to a study published today in JCO Clinical Cancer Informatics (JCO CCI). This tool is important because frailty is a critical factor in treatment decision-making for many patients with multiple myeloma, as the cancer most commonly arises among older adults. According to the authors, this tool is the first of its kind to assess frailty based on the accumulation of aging-associated diseases and disabilities—or biological age—rather than chronological age alone to predict overall survival in multiple myeloma.

“Our goal was to create a tool that could be widely applied using data sources at hand and that helps doctors provide better-informed treatment recommendations for their patients,” said study author Tanya S. Wildes, MD, MSCI, of Washington University School of Medicine in St. Louis. “Our results demonstrate that, for patients with multiple myeloma, chronological age alone is not a good measure for assessing overall health.”
As many as 35–40% of patients with multiple myeloma are age 75 or older. While new therapies and better supportive care have significantly improved outcomes, an ongoing challenge is distinguishing patients who can safely undergo these aggressive treatments from more frail patients who would benefit more from less aggressive approaches that preserve their overall health and quality of life.

“There’s so much excitement about many new treatment options in myeloma and across cancer, but we must not lose sight of the fact that the cancer is occurring within the body of a unique individual who has unique aging-related issues,” Dr. Wildes stated. “What we have to take into account is not only the underlying cancer and approaching its treatment, but also the frailty status of our older patients.”

About the Study
In this federally funded study, researchers analyzed data from 2,692,361 non-cancer patients over the age of 66 in Medicare Health Outcomes Survey (MHOS) and the Surveillance, Epidemiology, and End Results (SEER)-MHOS linked databases between 1998 and 2009.

The MHOS annually collects self-reported symptoms, functional status and health-related quality of life data from Medicare beneficiaries enrolled in Medicare Advantage plans. In the SEER-MHOS linked dataset, data from MHOS are linked to demographics, tumor characteristics, and survival for those with a cancer diagnosis who reside in the coverage area of the 14 registries participating in the SEER-MHOS linkage.

Using these data, the authors created a deficit accumulation frailty index (DAFI) made up of a 25-item scale and scoring system. The index includes criteria in five categories for scoring frailty: activities of daily living (e.g., difficulty dressing or eating); chronic health conditions; functioning (e.g., difficulty walking or climbing several sets of stairs); general health; and mental health. Patients whose scores exceed a certain threshold on the scale are classified as frail.

The index then was applied to 305 patients with newly diagnosed myeloma in the SEER-MHOS database to predict overall survival.

Key Findings
In applying the frailty index to people newly diagnosed with multiple myeloma and patients without cancer, the researchers found:

- For patients with multiple myeloma, age was weakly correlated with a higher frailty score, yet for non-cancer patients, an increase in age was strongly correlated with a higher frailty score
- Overall, 42% of non-cancer patients were considered frail compared to 52% of the patients with multiple myeloma
- The median overall survival of patients who were considered frail was 26.8 months compared
Among non-cancer patients, each 10% increase in frailty index score was associated with a 40% increased risk for death.

Among the patients with multiple myeloma, each 10% increase in the frailty index score was associated with a 16% increased risk of death.

“These findings underscore the need to place more consideration on biological age versus chronological age in multiple myeloma, recognizing that frailty is dynamic and encompasses many factors beyond the disease itself,” said Dr. Wildes. “Ultimately, the hope is that this tool will help us to better personalize care based on a fuller picture of our patients’ health so that we are not under-treating an older adult who can tolerate a more intense therapy or over-treating one who’s going to be vulnerable to the toxicities of therapy.”

Next Steps

There are several options for optimizing the data in the frailty index, including turning it into a computerized program and examining patients who are not newly diagnosed and have subsequent relapses, disease burden, and treatment toxicities.

The study is limited in the fact that it only reported overall survival and not progression-free survival, chemotherapy toxicity, or hospitalization rates. Additionally, the multiple myeloma population data was derived from patients enrolled in the Medicare Advantage program, which may have contributed to selecting participants that are overall lower risk due to the way the program incentivizes lower-cost enrollees.

Resources for your readers from Cancer.Net:

- Multiple Myeloma
- Multiple Myeloma: Introduction
- Caring for Older Adults With Cancer: Geriatrics Perspective

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