Frailty Index based on common laboratory tests for patients starting home-based medical care

Key Points

- There are several methods for evaluating frailty, including a standard Frailty Index (FI) based on assessments of functional abilities such as activities of daily living, and a Frailty Index calculated from common blood test results (Frailty Index-laboratory: FI-lab).
- FI-lab was found to predict mortality at least as well as standard FI in patients receiving home-based medical care.
- FI-lab may be calculated automatically using results of common laboratory tests performed in daily clinical practice, without additional invasion. And FI-lab is anticipated for assessing the risk of prognosis in a variety of clinical settings, including home-based medical care.

Summary

A research group led by Hirotaka Nakashima, Associate Professor, and Hiroyuki Umegaki, Professor, of the Department of Geriatrics, Nagoya University Hospital, has reported that a Frailty Index calculated from blood test results (Frailty Index-laboratory: FI-lab) in older patients receiving home-based medical care predicts mortality at least as well as a standard Frailty Index based on physical function and other parameters (Frailty Index: FI).

Frailty is a clinical state of vulnerability with inherent increased risk for adverse outcomes, including functional decline and mortality. Frail older patients are more prone to falls and other health problems, and are at increased risk for death. Many older patients who receive home-based medical care are frail, and assessment of frailty is important for appropriate medical care and care planning.

One of the most widely known indicators for evaluating frailty is FI. In recent years, FI-lab that use blood test results and other laboratory data have also been attracting attention. Because it is often difficult to use specialized medical equipment in home-based medical care, it is necessary to make effective use of test results that can be used anywhere, such as blood tests.

The study group analyzed data from a study enrolling patients who begin receiving home-based medical cares (the Observational study of Nagoya Elderly with HOme MEdical care study: the ONEHOME study) and found that FI-lab at enrollment predicted mortality within 1 and 2 years, independently of standard FI. Furthermore, the predictive ability of FI-lab was shown to be equal to or better than standard FI.

FI-lab can be calculated without additional invasion using test results from routine medical care, and can be automatically displayed in electronic medical records. Although FI-lab evaluates only laboratory test abnormalities and cannot substitute for an assessment of the patient's overall medical condition or functional status, it can help with a more accurate risk assessment and may trigger an early discussion about the goals of care.

Research Background

Frailty is a clinical state of vulnerability with inherent increased risk for adverse outcomes, including functional decline and mortality. Frail older patients are more prone to health problems such as falls, fractures, and hospitalization, and have an increased risk of death. With the global aging of society, home-based medical care has become an important part of the healthcare system. Many older patients receiving home-based medical care are frail, and assessment of frailty is important for appropriate medical care and care planning.

One of the most widely known methods of assessing frailty is Frailty Index (FI). Standard FI demands to evaluate a number of items across a variety of areas, including disease, symptoms, and physical function, and is calculated by dividing the number of abnormalities by the number of items evaluated. Standard FI ranges from 0 to 1. Another relatively new method is FI-lab, which calculates the degree of frailty based on laboratory tests such as blood tests. FI-lab was calculated by dividing the number of abnormed. FI-lab score also ranges from 0 to 1, and a higher score indicates more severe frailty.

Previous studies have shown that standard FI is associated with prognosis in a variety of clinical settings, including home-based medical care; for FI-lab, associations with prognosis has been reported for hospitalized older patients and community-dwelling older adults, but not for older patients receiving home-based medical care. Because it is difficult to use specialized medical equipment in home-based medical care, FI-lab, which utilize blood test results, may be particularly useful in this setting. Therefore, the research group investigated the relationship between FI-lab and prognosis using data from a study that enrolls patients who start receiving home-based medical care (the ONEHOME study).

Research Results

188 patients were included in the analyses, with standard FI calculated using 42 items and FI-lab using 25 blood test results.

The analyses showed that a higher FI-lab at enrollment was associated with a higher subsequent mortality rate (Figure). FI-lab was also associated with mortality within 1 and 2 years, independent of standard FI (per 0.1 points of FI-lab, odds ratio for 1-year mortality 1.53, 95% confidence interval 1.25-1.88; odds ratio for 2-year mortality 1.49, 95% confidence interval 1.25-1.77). Furthermore, the predictive ability of FI-lab was shown to be at least as good as that of standard FI.

Research Summary and Future Perspective

FI-lab may represent the degree of accumulation of acute and/or chronic disease as reflected in blood tests. FI-lab can be calculated without additional invasion using test results from routine medical care, and can be automatically displayed in electronic medical records. Although FI-lab evaluates only laboratory test abnormalities and cannot substitute for an assessment of the patient's overall medical condition or functional status, it can help with a more accurate risk assessment and may trigger an early discussion about the goals of care.

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