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Mini review

Is There Place for Eyeballing in Frailty Assessment of Cardiology Patients?

Ilya Losin[1]*, Ziad Arow[1,2#], Abid Assali[1,2], David Pereg[1,2] and Alexander Omelchenko[1,2]

[1]*Cardiology Department, Meir Medical Center, Kfar Saba, Israel*

[2]*Sackler Faculty of Medicine, Tel-Aviv University, Tel-Aviv, Israel*

[#]*Contributed equally to the manuscript*

Abstract

The prevalence of cardiovascular disease in older adults continues to increase, accompanied by a growing need for individualized risk stratification. Frailty has emerged as a key determinant of outcomes in elderly patients, complementing chronological age and comorbidity profiles. Despite numerous validated frailty assessment tools, time constraints and limited standardization have led to widespread reliance on the so-called "eyeball test", a clinician's rapid subjective estimation of frailty. This mini-review summarizes current evidence regarding the accuracy and clinical implications of eyeball frailty assessment in cardiology, compares it to validated objective tools, and highlights challenges and future directions for integrating frailty screening into routine practice.

Introduction

The burden of cardiovascular disease in older adults is continuously rising. Atrial Fibrillation (AF), conduction disorders, and valve diseases are regarded as "geriatric conditions". In this population, clinical decision-making regarding interventions such as prophylactic Implantable Cardioverter-Defibrillators (ICDs), percutaneous valve or vascular procedures, and the use of certain medical therapies is often complex, raising both ethical and economic concerns. It has become clear that age alone is insufficient to characterize these patients and determine their eligibility for therapies. Therefore, contemporary cardiology practice requires tools that assess biological rather than chronological age. One of the most useful constructs in this context is frailty, a multidimensional syndrome characterized by diminished resilience to stressors due to declines in metabolic, neuromuscular, and functional reserve.

Frailty is a syndrome defined as increased vulnerability to stressful events secondary to low metabolic, neuromuscular, and workout reserve and function [1,2]. The concept of frailty has emerged as a means of better characterizing the resiliency of older adults beyond their age and comorbidities, in order to refine estimates of predicted risk and guide decisions for individualized care. There is increasing evidence of the critical importance of frailty assessment in cardiology patients. Frail patients have a higher risk of death from competing noncardiac causes [3,4], which may mitigate the benefits of some cardiac interventions and, in some cases, lead to changes in medical management [5,6].

Frailty Assessment Tools in Cardiology

Several rapid frailty screening tools, including the Fried phenotype, Clinical Frailty Scale (CFS), PRISMA-7, FRAIL questionnaire, Essential Frailty Toolset (EFT), and chair rise test were suggested for frailty assessment [7-9]. In elderly outpatient populations with cardiovascular disease seen in cardiology clinics, the Fried frailty phenotype, CFS, and FRAIL questionnaire are the most widely studied standardized tools for frailty assessment. The Fried test is considered the gold standard for research, offering robust prediction of adverse outcomes, but requiring physical performance measures that may limit feasibility in routine practice [7,10,11]. The CFS is highly feasible (completion time <1 minute), demonstrates strong agreement with more complex tools, and provides high sensitivity (87%) and specificity (89%) for identifying frailty in chronic heart failure and general cardiology outpatients [12-14]. The FRAIL questionnaire and Gérontopôle Frailty Screening Tool (GFST) also offer high sensitivity (88%) and specificity (83-86%), with overall accuracy exceeding 80% compared to the Fried phenotype [13,14].

Multidomain tools such as the Edmonton Frail Scale (EFS) and Essential Frailty Toolset (EFT) provide additional prognostic value, especially for predicting mortality and prolonged hospitalization, but require more time and resources [8,15]. The EFS has shown superior discrimination for mortality and hospitalizations in acute coronary syndrome patients compared to the Fried phenotype and CFS [15]. The EFT improves risk stratification in older patients with heart failure and adds incremental value to conventional risk models [8]. If we comprehensively assess the available instruments for evaluating frailty, a large number of various methods and tests can be noted. It is important to observe that these instruments and tests are heterogeneous and lack any standardization. This complicates their clinical application and scientific evaluation. This fact is also reflected in current guidelines, which emphasize the absence of an ideal instrument for assessing frailty.

***Corresponding author:** Ilya Losin, Cardiology Department, Meir Medical Center, 59 Tchernichovsky St, Kfar-Saba, 44281, Israel, Tel: +972 97472587; Fax: +1 972 97472812; E-mail: ilia.losin@clalit.org.il

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The "Eyeball Test" in Clinical Context

The eyeball test refers to a clinician's instantaneous visual and behavioral judgment of a patient's frailty, based on overall appearance, mobility, speech, and demeanor. Although rapid and intuitive, subjective frailty assessment is inherently influenced by cognitive bias, prior experience, and patient presentation. Interobserver variability remains a major limitation, what appears 'frail' to one clinician may not to another. Nevertheless, it persists as the most commonly applied method in routine practice because it requires no equipment, formal training, or scoring system. While guidelines suggest standard assessment without endorsing a specific tool, several attempts were made to evaluate accuracy of the eyeball test in comparison to objective evaluation with conflicting results (Table 1).

Setting	Study	What was done	Take-home message
Valve clinic	Ahmed et al., JACC [16]	Prospective assessment of eyeball vs objective measures (handgrip, walk speed, Katz ADL, SF-12) in 100 patients considered for transcatheter therapy or surgery.	Objective testing reclassified ~38% of patients and modified the surgical risk category in 26%, whereas reliance on the eyeball test alone often led to misclassification and can not be considered adequate to rule out frailty.
General cardiology outpatients	Arow et al., Am J Cardiol [17]	300 patients ≥75 y; eyeball vs Fried phenotype.	Sensitivity ~86%, specificity ~82%, AUC ~0.82; NPV ~90% - useful to rule out but not to rule in frailty.
Heart failure clinic	McDonagh et al., Heart Lung Circ [18]	Clinician-estimated frailty vs formal assessment (modified Frailty Phenotype).	Only fair agreement; subjective estimates are not a reliable replacement, use validated tools.
Electro-physiolo gy outpatients	Losin et al., Gerontology [19]	201 patients; clinician eyeball vs Fried; blinded comparison.	Sensitivity 88.9%, specificity 78.3%, NPV 91.2%, AUC 0.84 - strong rule-out; confirm positives objectively.
The "Eyeball Test" for Risk Assessment in Aortic Stenosis	Green et al. Structural heart, [20]	Eyeball vs composite frailty score (15-foot walk time, hand grip strength, independence in activities of daily living (ADL), and serum albumin.) in 100 patients with severe AS.	Subjective frailty and the objective composite frailty score were similarly predictive of treatment assignment (AUC = 0.66 vs. 0.65).

Table 1: Studies evaluating the accuracy of the eyeball test for frailty assessment.

Overall, the results indicate that the eyeball test provides moderate accuracy with a high negative predictive value. This suggests that the eyeball test may serve as a rapid first- line screening or triage tool to rule out frailty in apparently robust patients, but positive findings should be confirmed with standardized objective assessment. Interestingly, in most studies, the indication for frailty assessment was older age and the presence of certain cardiac conditions. Some evidence suggests that when a patient does not appear frail, objective testing is unlikely to reveal significant frailty. Therefore, the indications for performing frailty assessment should be clearly defined and evaluated in clinical trials.

The conflicting results in frailty studies are largely attributable to small sample sizes and heterogeneity in patient selection and assessment methods. In addition, the indication for frailty assessment is not well defined. In most studies, older age, presence of certain cardiac condition, or the need for cardiac procedure or surgery were inclusion criteria for frailty assessment, which makes its application in everyday clinical practice almost impossible. The American Hear Association (AHA) recommends that frailty assessment should be context-specific, using validated tools appropriate for the clinical scenario, and that the indications for assessment should be clearly defined in both clinical practice and research [21].

Conclusion

In summary, the indications for frailty assessment should be standardized and clearly defined in clinical trials, and objective assessment is most valuable when frailty is suspected based on clinical impression or risk profile. The uniform use of validated tools is essential to enhance comparability and clinical utility. Ultimately, the challenge is not to replace clinical intuition with scores, but to integrate both, harnessing the efficiency of the clinician's eye while grounding decision-making in validated, reproducible assessment.

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