CLINICAL VIGNETTE

Frailty and Functional Status Decline: Assessment, Consequences and Management

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Case Report

A 94-year-old female and long-term skilled nursing home resident on hospice developed perianal discomfort. Her past medical history of mild cognitive impairment, atrial fibrillation, hypothyroidism, cataract, macular degeneration, glaucoma, mixed urinary incontinence, peripheral neuropathy, normocytic anemia, and knee osteoarthritis. The perianal discomfort was associated with local area tenderness, erythema, and fluctuation as well as serum leukocytosis. Her medical power of attorney was notified and after discussion, the decision was made to transfer her to the hospital with plans to return to the nursing home hospice care. Computed tomography scan identified a bilateral complex multiloculated perianal abscess and septic shock requiring surgical incision & drainage and brief intensive care unit stay for closer monitoring and administration of midodrine.

The patient had been relatively independent in both her basic and instrumental activities of daily living, residing in her own apartment until one year prior after a fall with hospitalization for wrist fracture. Following this acute event, she had a slow decline in appetite, weight, cognition, mobility and functional status. COVID restrictive nursing home policies prohibited resident socialization and family visitation and the patient became very withdrawn and eventually bed-bound. She enrolled in hospice several months prior to the acute hospitalization given her tremendous frailty, poor oral intake with progressive weight loss, refusal of recommended medications and evaluation and an expressed wish to focus on comfort directed care.

Discussion

Functional status refers to a person's ability to perform basic and instrumental activities of daily living and degree of mobility. When assessing function, providers should ask if a patient is fully independent or requires help in the completion of a task, rather than if the patient is able to simply engage in the activity. Disability in ADLs occurs when there is mismatch between a person's capabilities and environmental demands. For example, a patient may experience difficulty with independently arising from a cushioned, lowered chair but not from a wooden, raised seat. Aside from a rehabilitation setting, performance-based testing of functional status should focus primarily on mobility which includes gait, balance and transfers (Table 1). Further assessments can be made by observing the patient as they complete simple tasks such as climbing onto the exam table, picking up a pen and writing a sentence or touching the back of their head using both hands.[1] Asking about a person's life space is another way to distinguish between levels of mobility in a spectrum of settings. The concept of life space pertains to a series of concentric areas originating from where a person sleeps and expanding to more distant locations such as outside a facility (for nursing home residents) or beyond one's town (for community dwelling adults).[1,2] For those with diminished life space, such as our patient, the ability to transfer to and from bed may be assessed.

An acute decline can be caused by an injury or illness that leads to hospitalization, a setting that included additional hazards, including consequences of immobility and hospital acquired conditions). Severe forms of disability usually arise from a small number of acute events including stroke, pneumonia, hip fracture, and heart failure.[1] A portion of new disability events are linked to less serious insults that lead to functional status decline without hospitalization. Among frail elders, about a third of new disability episodes occur in the absence of a discernable trigger event. This may be explained by more subtle disturbances in physiologic balance. The loss of compensatory ability is particularly concerning in this vulnerable subset of patients who already have minimal reserve capacity. The majority of newly disabled older adults recover independent function within 6 months but are at high risk of subsequent disabling events.[1]

Identifying and caring for frail patients is a cornerstone of geriatric medicine. Frailty has many definitions but is generally thought to be a physiologic state of heightened vulnerability to stressors. Frailty has consistently been shown to be associated with adverse outcomes including falls, fractures, hospitalization, institutionalization, poor quality of life, dementia and premature death.[3] There are two prevalent paradigms: (1) Frailty is the result of an "accumulation of deficits" or an aggregate of often unrelated diseases, impairments, and health status of an individual.[4,5] (2) Frailty as a phenotype where a distinct pathophysiology of decline across multiple physiologic systems leads to low reserve.[6] In this second definition, frailty leads to many dysregulated metabolic processes including sarcopenia or decreased muscle mass/strength, slowed motor performance, decreased physical activity, increased fatigability and inadequate nutritional intake.[1] There are a growing number of assessment tools but no consensus on the best measurement tool. Table 2 suggests one standardized approach to stage frailty

severity (as a phenotype) by determining a five point score.[6] Slower walking speed is an early manifestation of frailty. It can serve as a quick stand-alone screening tool and has been shown to predict mobility disability and mortality.[7] Management of frailty focuses on addressing modifiable precipitating causes, improving clinical manifestations including nutrition, strength and physical activity, and minimizing consequences of fall risk, environmental barriers, and lack of social support. Severe frailty, characterized by meeting 4-5 criteria with metabolic abnormalities of low cholesterol and albumin, predict high short-term mortality rates. Palliative care or hospice may be the next appropriate step after clarifying alignment with an individual's goals and values.

Conclusion

Frailty predicts functional impairment, outcomes, higher mortality risk. Frailty and functional status are intertwined and are critical components to consider in clinical decision making. Using tailored approaches to identify, assess, and manage functional status changes in frail patients will allow clinicians to minimize disability and feel empowered to deliver well-informed care to our older adults.

Table 1. Performance-based testing of mobility[1,8-10]

Category	**Assessment**	**Significance**	**Management Considerations**
Strength, Transfers	Chair stand Ask patient to stand from seated position in a hard-backed chair while keeping arms folded across the chest	Inability to complete task suggests quadricep weakness and highly predictive of future disability	Medication reconciliation and deprescribing if appropriate Assess need for assistive devices Modify home environment Simple Home Exercises (such as utilizing as a chair) Community-based exercise programs Physical therapy referral Tai Chi
Gait Speed	Timed 4 meter walk Timed Up and Go (TUG)	Increased Risk of Falls: <0.6m/s ≥12 seconds	
Balance	Side-by-Side Semi-Tandem Full-Tandem	At increased risk of falls if patient cannot hold stance for 10 seconds	

Table 2. Fried criteria outlining the phenotype of frailty[6]

Characteristics of Frailty	**Criteria**
Shrinking, Weight loss, Sarcopenia Weakness Exhaustion or poor endurance Low activity Slowness	Lost >10 lbs unintentionally in the prior year Grip strength: lowest 20% (by gender, body mass index) Self-reports exhaustion or "everything I did was an effort" Lowest 20% of energy expenditure by gender: *Males* <383 Kcals/week *Females* <270 Kcals/week Walking time/15 feet: slowest 20% (by gender, height)
Presence and severity of frailty	<3 criteria present: positive for frailty phenotype 1 or 2 criteria present: Intermediate or pre-frail 0 criteria present: robust or non-frail

REFERENCES

1. **Harper GM, Lyons WL, Potter. JF**. GRS: Geriatrics review syllabus. 2019. New York, NY: American Geriatrics Society.
2. **Poranen-Clark T, von Bonsdorff MB, Rantakokko M, Portegijs E, Eronen J, Kauppinen M, Eriksson JG, Rantanen T, Viljanen A**. Executive function and life-space mobility in old age. *Aging Clin Exp Res*. 2018 Feb;30(2):145-151. doi: 10.1007/s40520-017-0762-3. Epub 2017 Apr 21. PMID: 28432560.
3. **Kojima G**. Quick and Simple FRAIL Scale Predicts Incident Activities of Daily Living (ADL) and Instrumental ADL (IADL) Disabilities: A Systematic Review and Meta-analysis. *J Am Med Dir Assoc*. 2018 Dec;19(12):1063-1068. doi: 10.1016/j.jamda.2018.07.019. Epub 2018 Sep 8. PMID: 30206033.
4. **Bergman H, Ferrucci L, Guralnik J, Hogan DB, Hummel S, Karunananthan S, Wolfson C.** Frailty: an emerging research and clinical paradigm--issues and controversies. *J Gerontol A Biol Sci Med Sci*. 2007 Jul;62(7):731-7. doi: 10.1093/gerona/62.7.731. PMID: 17634320; PMCID: PMC2645660.
5. **Rockwood K, Mitnitski A**. Frailty in relation to the accumulation of deficits. *J Gerontol A Biol Sci Med Sci*. 2007 Jul;62(7):722-7. doi: 10.1093/gerona/62.7.722. PMID: 17634318.
6. **Fried LP, Tangen CM, Walston J, Newman AB, Hirsch C, Gottdiener J, Seeman T, Tracy R, Kop WJ, Burke G, McBurnie MA; Cardiovascular Health Study Collaborative Research Group**. Frailty in older adults: evidence for a phenotype. *J Gerontol A Biol Sci Med Sci*. 2001 Mar;56(3):M146-56. doi: 10.1093/gerona/56.3.m146. PMID: 11253156.
7. **Studenski S, Perera S, Patel K, Rosano C, Faulkner K, Inzitari M, Brach J, Chandler J, Cawthon P, Connor EB, Nevitt M, Visser M, Kritchevsky S, Badinelli S, Harris T, Newman AB, Cauley J, Ferrucci L, Guralnik J**. Gait speed and survival in older adults. *JAMA*. 2011 Jan 5;305(1):50-8. doi: 10.1001/jama.2010.1923. PMID: 21205966; PMCID: PMC3080184.
8. Assessment the 4-stage balance test. Centers for Disease Control and Prevention. (2017). Retrieved November 5, 2021, from https://www.cdc.gov/steadi/pdf/4-Stage_Balance_Test-print.pdf.
9. **Cummings SR, Studenski S, Ferrucci L**. A diagnosis of dismobility—giving mobility clinical visibility: a Mobility Working Group recommendation. *JAMA*. 2014 May;311(20):2061-2. doi: 10.1001/jama.2014.3033. PMID: 24763978; PMCID: PMC5012417.
10. **Rydwik E, Bergland A, Forsén L, Frändin K.** Investigation into the reliability and validity of the measurement of elderly people's clinical walking speed: a systematic review. *Physiother Theory Pract*. 2012 Apr;28(3):238-56. doi: 10.3109/09593985.2011.601804. Epub 2011 Sep 19. PMID: 21929322.