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Case Report

Frailty and Cognitive Impairment Characterized by Depression and Malnutrition, Manifesting as Repeated Falls in an 82-Year-Old Woman

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SUMMARY

World populations are aging. The number of octogenarians is projected to triple in the year 2050. The aging population will mean more chances of an increased proportion of the population being physically frail with impaired cognition; when accurately recognized with timely interventions, this is an amendable condition. Interventions are of paramount importance in our elderly population to avoid disability and, therefore also avoid undue burdens to the patient, the caregivers, and the society. Herein, we report a case of an elderly who presented with frailty and impaired cognition, characterized by depression and malnutrition, manifested as repeated falls, who recovered after appropriate interventions like physical rehabilitation exercises and adequate nutritional support.

1. Introduction

By 2050, one in six people will be 65 years and older. According to the United Nations projections, the number of older people will be more than twice the number of children under the age of five and equivalent to the number of children under 12.[1] Many researchers started to study the combination of physical frailty and cognitive impairment together as a forerunner of disability, affecting the well-being of our elderly population.[2] However, some researchers considered that frailty's physical and cognitive components should be considered separate entities instead of part of a single macro-phenotype.[3] It was soon realized that we sometimes observe a rapid cognitive impairment in an older patient when he or she shows reduced activities due to limitations in geriatric care; this suggests a strong connection between cognitive function and physical fitness or activities, indicating that both physical and cognitive assessments are required for elderly care.[4] We report a case of physical frailty with cognitive change, manifesting as repeated falls, revealing the positive impact of interventions like physical rehabilitation exercises and adequate nutritional support.

2. Case report

An 82-year-old widow, who lives alone, is independent in her activities of daily living (ADL), with a baseline Clinical Frailty Scale (CFS) of 5 (Figure 1). She was brought to our medical attention due to repeated falls. She is generally healthy before, having no chronic medical illness nor taking any medications. Two weeks ago, her nephew, who make frequent visits, stated that there was a time when he found her lying on her living room floor, she seemed to have had a fall. At that time, she is alert, only too weak to get up by herself. There was no head trauma nor loss of consciousness. She remained alert and denied any headaches, nausea, vomiting, nor focal weakness; thus, no immediate medical consultation done. She continued to live by herself.

A few hours before admission, her nephew again found her on the floor. She had slipped and fallen again, while trying to open her refrigerator door. Urinary and stool incontinence were observed soiling the floor where she lies. She was too weak to get up by herself and seemed disoriented, and too frail to answer if she had hit her head or know how long she had been lying there. She was then brought into our emergency department. Upon arrival, she is presented as obtunded, afebrile, and hypotensive. An electrocardiogram showed a normal sinus rhythm with no ischemic changes. Laboratory data only revealed leukocytosis (WBC 15,800 per microliter) with left shift (bandemia of 20%); concomitant increased C-reactive protein (CRP 6.5 mg/dL) suggesting inflammation, though no source of inflammation can be found. A consultation with our geriatrician revealed a recent acute functional decline, with geriatric syndromes including cognitive dysfunction, repeated falls, and incontinence. She was admitted to our Geriatric Ward with a 24-hour caregiver. Other workups done, including thyroid function tests, vitamin B12 levels, folic acid levels, renal sonography, 24-hour Holter monitoring, urinalysis and radiologic images, were within normal limits. We performed a Comprehensive Geriatric Assessment (CGA) (Table 1), which unveiled a depressed mood with low motivation due to the recent death of her only son 6 months ago living abroad. In such dispirited mood, which lead to a decrease in appetite, poor nutritional status, and generalized muscle weakness, making her prone to falls. A psychiatric evaluation favors a diagnosis of Major Depression Disorder, after which she was started on escitalopram 10 mg once a day

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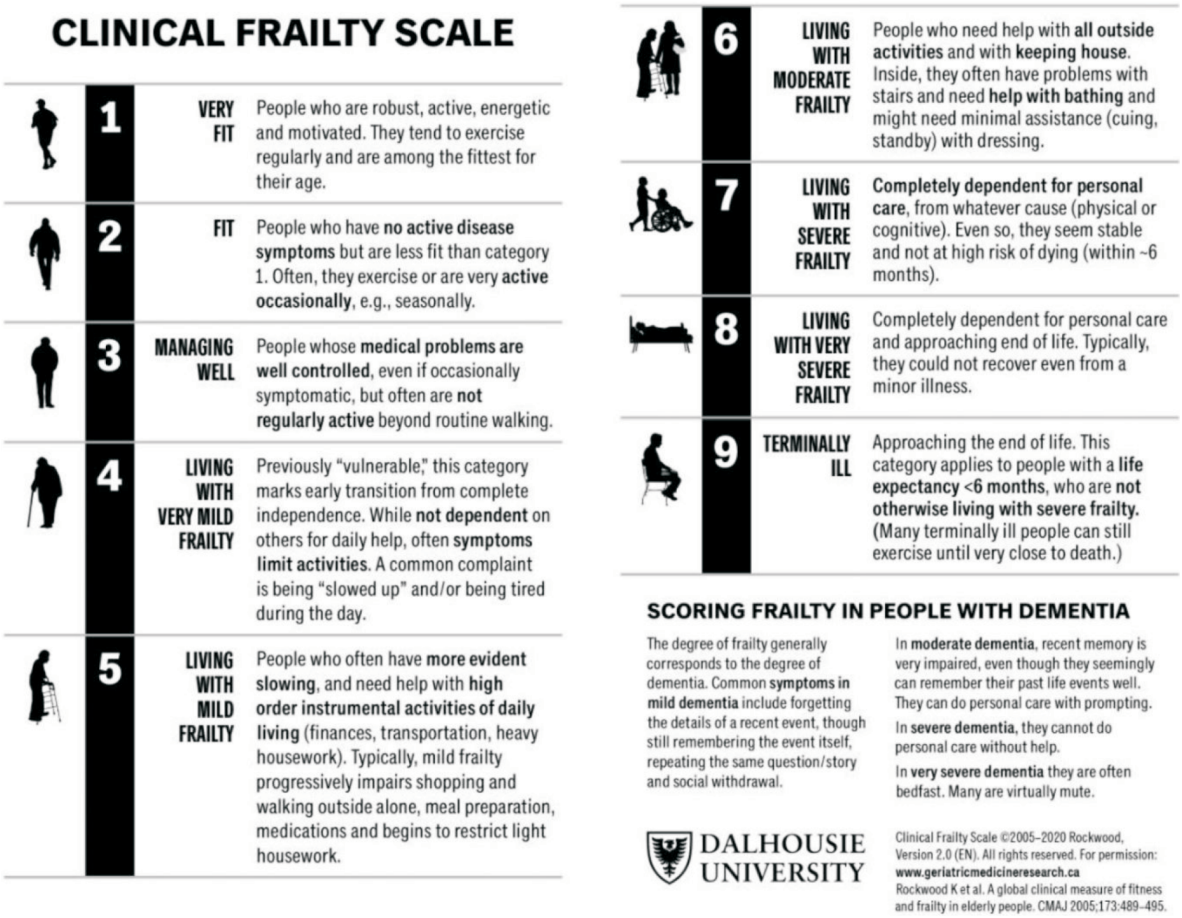

Figure 1. Clinical Frailty Scale (CFS) showed vivid pictures summarizing the overall level of frailty of elderly adults more than 65 years of age as evaluated by an experienced clinician.[7]

Table 1
The result of Comprehensive Geriatric Assessment of our patient: acute functional decline, accompanied by acute changes in cognition indicating dementia and depression; decreased physical performance; prone to falls; weakness with low grip strength; inadequate nutrition; positive need for a caregiver.

Items	Method/Assessment	Results (patient score/maximal score)
Delirium	Confusion Assessment Method (CAM)	Negative
Dementia	Short Portable Mental Status Questionnaire (SPMSQ) AD8 Dementia Screening Interview	SPMSQ 6/10 AD8 score: 4/8
Depression	Geriatric Depression Scale (GDS-15)	GDS-15 score: 9/15
Eyes	Can see	Negative
Ears	Whisper Test	Negative
Quality of life	EQ-5D	-.674 (poor quality of life)
Physical performance	Instrumental Activities of Daily Living (IADL), Activities of Daily Living (ADL)	IADL 0/8, ADL 40/100
Falls		Positive history of falls
Grip strength (female > 18 kg)		Right 6.1 kg, Left 6.9 kg
Modified Functional Ambulation Classification (MFAC)		V = supervised walker (patient requires verbal supervision or standby help from one person without physical contact)
Polypharmacy		Negative
Pain		Negative
Pressure sores		Negative
Incontinence		Positive
Nutrition	Mini Nutritional Assessment – Short form (MNA-SF)	8 = at risk of malnutrition
Care burden		Positive need for a caregiver (partially dependent on activities of daily living)

in combination with agometatine 25 mg at bedtime. A rehabilitation program with daily strengthening-balance exercises and adequate nutritional advises by our nutritionist were implemented. Daily psychological encouragement by our interdisciplinary team of geriatricians, psychiatrist, nurses, occupational and physical therapist, as well as her caregiver, enlightened the patient; she became more engaged, regaining her strength and able to walk again unneeded of assistance. She was then discharged for outpatient follow-up. On close

observation on her three consecutive monthly follow-ups, with concomitant use of her antidepressants, she regained her physical strength and cognition, and her CFS a month later improved from a baseline scale of 5 to a scale of 3, a fast recovery to her better usual self.

3. Discussion

The Geriatric Syndrome includes dizziness, delirium, depression, change in cognition, weight loss, frailty, mobility impairment, incontinence, and pressure sore. Our patient is brought to us due to delirium, weakness with recent repeated falls, and incontinence. Delirium, as described in The American Psychiatric Association Publishing Textbook of Geriatric Psychiatry, is "an acute confusion state, inability to focus, with loss of cognitive function, often fluctuating during the day". It usually affects hospitalized older adults. It is caused by multiple complexities, including severe chronic diseases, medications side effects, underlying psychological stress, and an unfamiliar environment. It is reversible once the stressors are corrected.[5] Further interrogation of our patient revealed the psychological stress from the recent death of her only son. Psychiatric disorders can also impair cognition and give the appearance of neurodegenerative disease. The most used definition of frailty proposed by Fried et al. consists of five assessments: weight loss, weakness, slowness, exhaustion, and low physical activity. Combining three or more is considered the "frailty phenotype", and only one or two represent "pre-frailty".[6] Our patient presented with the frailty phenotype, showing weakness, low physical activity, and slow walking, making her prone to falls. We further document if there is a recent acute functional decline through the CFS. The CFS was introduced by the Canadian Study of Health and Aging (CSHA) to summarize the overall level of frailty of an older adult by an experienced clinician (Figure 1). It is a judgment-based screening tool for frailty and to stratify degrees of frailty; it summarizes information from a clinical encounter with an older person, to screen for and quantify an individual's overall health status.[7] Her CFS two weeks before this encounter was 5 and declined to CFS 7 on the day of hospitalization. We use Lawton's Instrumental Activities of Daily Living Scale (IADL) to assess independent living skills to identify how a person is functioning at the present and to identify change over time.[8] Her IADL showed only two out of seven functional domains, documenting an acute functional decline. Further history using the CGA (Table 1), assists us in disclosing the other possible concealed issues of our elderly patient, including tools assessing for geriatric syndrome, that is depression, dementia, weakness using the hand grip strength test, and slowness with the timed up and go (TUG) test. Here, our patient showed a concurrent existence of physical frailness and impairment of cognition.

The timely recognition of physical frailty and cognitive impairment, followed by interventions are of paramount importance in our elderly population, to avoid disability and undue burdens. To restore frailty of an older adult, nutritional and physical rehabilitation interventions should be foremost. Supplements and replacement therapy of adequate nutritional value should be implemented, e.g. Vitamin D. While vitamin D may not help to prevent depression, monitoring and treatment of vitamin D deficiency may be beneficial in alleviating the adverse influences of depression on health.[9] The supportive evidence of risk for depression includes disrupted sleep;[10] studies have suggested that older adults with insomnia are legitimate targets for selective interventions to prevent depression in later life.[11] It is also observed that depression concommitant with a visual impairment is a common problem, and it should recognize and address early.[12] We encouraged our patient to go out, join social groups and connect with like-minded people. Social disconnectedness with perceived isolation is strongly related to anxiety and depression in old adults.[13] Public health resources could reduce perceived isolation by facilitating social network integration and participation in community activities, and so preventing anxiety and depression. Depression is a risk factor for dementia.[14] Once depressed mood sets in, loss of appetite and eventually malnutrition follows; this in turn may lead to physical frailty with impaired cognition. Physical frailty with impaired cognition, if not recognized early with timely interventions, are common cause of disability, thus providing undue burdens to the patient, the caregivers and even the society. Social connectedness, physical rehabilitation exercises and adequate nutritional support direct our older adults to healthy aging.

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