

REVIEW ARTICLE

Impact of frailty in older patients with diabetes mellitus: An overview



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KEYWORDS

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Abstract Diabetes and frailty are two conditions that frequently occur concurrently and are increasingly prevalent in the older patient. We review the concept, epidemiology and consequences of frailty, and the implications of the presence of frailty in the management of diabetes. Frailty is associated with decreased quality of life, a risk of falls, new or increased disability, hospitalization, and increased mortality. All of these factors affect the management of diabetes in older patients. It is important to rule out frailty in all diabetic patients aged >70 years; if frailty is suspected, a comprehensive and multidisciplinary medical and functional assessment of the patient should be conducted to develop an individualized treatment plan. This plan should include nutritional measures, physical activity, and education on self-care and diabetes; drugs should not be used without a clear indication. Antihyperglycemic drugs that may cause excessive weight loss and/or are associated with a high risk of hypoglycemia should be avoided. © 2016 SEEN. Published by Elsevier España, S.L.U. All rights reserved.

PALABRAS CLAVE

Diabetes;
Hiperglucemia;
Fragilidad;
Sarcopenia;
Personas mayores

Efectos de la fragilidad en los pacientes mayores con diabetes: Una revisión

Resumen La diabetes y la fragilidad son 2 procesos que se producen a menudo simultáneamente y son cada vez más prevalentes en los pacientes mayores. Revisamos aquí el concepto, la epidemiología y las consecuencias de la fragilidad, y las implicaciones de la presencia de fragilidad en el tratamiento de la diabetes. La fragilidad se asocia con un empeoramiento de la calidad de vida, riesgo de caídas, aparición o aumento de la discapacidad, hospitalización y aumento de la mortalidad. Todos estos factores afectan al tratamiento de la diabetes en los pacientes de mayor edad. Es importante descartar la existencia de fragilidad en todos los pacientes diabéticos de más de 70 años de edad; si se sospecha fragilidad, debe efectuarse una valoración médica y funcional, exhaustiva y multidisciplinaria, del paciente para idear un plan de tratamiento individualizado. Este plan debe incluir medidas nutricionales, actividad física y educación sobre los

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cuidados personales y la diabetes; no deben utilizarse fármacos si no están claramente indicados. Deben evitarse los hipoglucemiantes que puedan causar una pérdida de peso excesiva o que se asocien con un riesgo elevado de hipoglucemia.

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Aging of the population

Increasing life expectancies and declining birth rates mean that the segment of the population comprising people aged >60 years is growing at a rapid rate in most countries. Worldwide, it is estimated that this population will increase from 600 million to 2 billion between 2000 and 2050.¹ In Spain, according to estimates from the National Statistics Institute (2014), the population of people aged >65 years, currently 18.2%, will increase up to 24.9% in 2029, and 38.7% in 2064.²

This demographic change can be perceived as an achievement of public health policies and socioeconomic development; however, this change also poses a major challenge to society, which must adapt to improve the health and functional capacity of older people.¹ In this context, frailty, which is considered to be the most characteristic clinical condition of an aging population, is particularly important.³

This article provides an overview of the concept, epidemiology and consequences of frailty, as well as the implications of the presence of frailty in the management of diabetes.

Frailty

Definition and diagnostic criteria

Frailty can be defined as a situation of extreme vulnerability to the effects of low-intensity stressors. It results from difficulty maintaining homeostasis due to loss of functional reserve.³ Two conceptual frameworks have been used to explain frailty.

- (1) The 'frailty phenotype' was described by Fried et al.⁴ in 2001 using data obtained from the Cardiovascular Health Study. According to this phenotype, frailty represents an alteration in different physiological systems that causes the aforementioned drop in functional reserve and is expressed clinically through the five criteria shown in Table 1.⁴ According to this definition, a person is considered frail if they meet at least three of the five criteria and pre-frail if they meet one or two of these criteria. Those who do not meet any of the criteria are classified as robust.⁴
- (2) In the 'cumulative deficit model' created by Rockwood et al.,⁵ frailty is defined by the presence of deficits that accumulate over time and progress to a level of vulnerability that becomes incompatible with independent living and survival. The operational translation of this conceptual framework is embodied in the Frailty

Table 1 Operational criteria of the frailty phenotype.

Characteristic	Measure
Unintended weight loss (in the past year)	>4.5 kg (communicated) or $\geq 5\%$ in the past year (objectified)
Weakness	Grip strength (adjusted for sex and BMI) in the lowest quintile
Self-reported exhaustion	Communicated by means of two statements of the CES-D ^a depression scale: <i>'I felt that everything I did was an effort'</i> and <i>'I could not get going'</i> The individual would report always or almost always (3–4 days/week or greater)
Slowness	Walking time 4.57 m (adjusted for sex and height) in the lowest quintile
Low physical activity	Energy expenditure: – Men: <383 kcal/week – Women: <270 kcal/week
Presence of frailty	
Frail: at least three criteria are met	
Pre-frail: one or two criteria are met	
Not frail: no criteria are met	

Adapted from Fried et al.,⁴ 2001.

^a Center for Epidemiologic Studies-Depression Scale (CES-D) is a 20-item instrument that assesses symptoms of depression in DSM-IV.

BMI, body mass index; DSM-IV, Diagnostic and Statistical Manual of Mental Disorders (fourth edition).

Index, which quantitatively describes the health status of the patient and the progression of their frailty over time and evaluates potential deficits the patient may have in the following categories: disease, cognitive status, health conditions, nutritional status, ability to communicate, independence for activities of daily living, motivation, perception of health status, strength, balance, mobility, sleep, social aspects, geriatric syndromes, and disability.^{5–7} The value of this index for each individual is calculated as the ratio of observed deficits to the total number of possible deficits.

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