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Research article

Pressure ulcer in frail hospitalized elderly people

Úlcera por presión en ancianos frágiles hospitalizados

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ABSTRACT

Introduction: Pressure ulcer is a lesion of ischemic origin produced by prolonged pressure. This entity currently represents an important health problem.

Objective: To characterize frail patients with pressure ulcer admitted to "Dr. Carlos J. Finlay" Central Military Hospital in the period between January 2021 and July 2021.
Methods: An observational cross-sectional study was carried out. We worked with 105 frail elderly people. The prevalence of pressure ulcer was estimated according to the following variables: age, age group, sex, skin color, schooling, marital status, depth of the lesion, location, patient mobility and continence, presence of diseases, nutritional status, and cognitive impairment.
Results: The mean age was 76.9 years. The prevalence of pressure ulcers in frail elderly people was 29.5 % (CI: 21-38.1). There was a predominance of Grade II ulcers (51.6 %; CI: 35.5-70.9) and ulcers of sacral location (38.7 %); CI: 22.6-54.8). Additionally, 86.7 % (CI: 80.5-92.3) had reduced mobility and 23.7 % (CI: 19-38.3) had urinary continence disorders. On the other hand, 61.3 % (CI: 45.2-77.4) of patients who developed pressure ulcer had poor nutrition and 51.6 % (CI: 39.3-68.5) had dementia.
Conclusions: The prevalence of pressure ulcers is high in elderly patients admitted to the internal medicine ward. Its prevalence increases with decreased mobility, dementia and poor nutrition.

Keywords: Pressure ulcer; nutritional status; dementia; cognitive impairment; health problem.

RESUMEN

Introducción: La úlcera por presión, es una lesión de origen isquémico, producida por presión prolongada. Esta entidad representa un importante problema de salud.
Objetivo: Caracterizar a los pacientes frágiles con úlcera por presión ingresados en el Hospital Militar Central "Dr. Carlos J. Finlay", en el período enero de 2021-julio de 2021.
Métodos: Se realizó un estudio observacional, de corte transversal. Se trabajó con 105 adultos mayores frágiles. Se estimó la prevalencia de úlcera por presión según las variables: edad, grupo etario, sexo, color de piel, escolaridad, estado civil, profundidad de la lesión, localización, movilidad del paciente, continencia, presencia de enfermedades, estado nutricional y deterioro cognitivo.
Resultados: La edad promedio fue de 76,9 años. La prevalencia de úlceras por presión en ancianos frágiles fue de 29,5 % (IC: 21-38,1). Predominaron las úlceras grado II (51,6 %; IC: 35,5-70,9) y de localización sacra (38,7 %; IC: 22,6-54,8). El 86,7 % (IC: 80,5-92.3) tenía movilidad reducida y el 23,7 % (IC: 19-38,3) tenía trastornos de continencia urinaria. El 61,3 % (IC: 45,2-77,4) de los pacientes con úlcera por presión padecía del mal nutrición y el 51,6 % (IC: 39,3-68,5) tenía demencia.
Conclusiones: La prevalencia de úlceras por presión en ancianos frágiles es alta en adultos mayores ingresados en sala de medicina interna. Su prevalencia aumenta en ancianos con disminución de la movilidad, dementes y con mal nutrición.

Palabras clave: Úlcera por presión; estado nutricional; demencia; deterioro cognitivo; problema de salud.

INTRODUCTION

At present, 19 % of the Cuban population is classified as elderly. It is expected that by 2025, it will be 26 % and by 2050 more than 30 %.[1] In this context, a significant percentage of elderly people constitutes a population group vulnerable to suffer adverse health effects, that is to say, they are fragile.[2]

Pressure ulcer (PU) is a lesion of ischemic origin, located in the skin and underlying tissues with loss of cutaneous substance produced by prolonged pressure or friction between two hard planes.[3]

Pressure ulcer represents an important health problem that not only affects patients and their families, but also has a great impact on health systems because, currently, their incidence and prevalence are considerable. The hospital setting is considered to be one of the most important places for the appearance of these lesions, since there is no adequate mobilization of the patient and there may also be a prolonged stay.[4]

The incidence rates of pressure ulcer vary according to health care settings. Their incidence varies from 0.4 % to 38 % in hospitals, from 2.2 % to 23.9 % in skilled nursing facilities, and from 0 % to 17 % in home care agencies.[5]

There are evidences that most pressure ulcers occur early in the admission process. For hospitalized patients, they may occur within the first two weeks.[6]

In another sense, frailty is a clinical-biological syndrome characterized by a decrease in the resistance and physiological reserves of the older adult to stressful situations, as a result of the cumulative wear and tear on physiological systems. It is related to the occurrence of adverse health effects such as: falls, disability, hospitalization, institutionalization, and death.[7] Therefore, it is logical to assume that the frail elderly is susceptible to developing pressure ulcer.

In this perspective, the following question arises: What is the prevalence of pressure ulcer in hospitalized frail elderly people?

As an objective of this work, we propose: To characterize frail patients with pressure ulcer admitted to "Dr. Carlos J. Finlay" Central Military Hospital, in the period between January 2021 and July 2021.

METHODS

An observational, cross-sectional study was carried out in the internal medicine service of "Dr. Carlos J. Finlay" Central Military Hospital from January 2021 to July 2021. We worked with a sample of 105 frail elderly people, which coincides with the total number of frail elderly people attended in the hospital during the period described above.

The inclusion criteria were: age over 60 years and diagnosis of frailty syndrome. The criteria of the Association of Combatants of the Cuban Revolution (ACCR) were used in the diagnosis of frailty syndrome.[8] Major and minor criteria were established.

Major criteria: Two or more chronic diseases acquired in the last two years and diagnosed by a physician; dementia according to criteria of the Diagnostic Algorithm 10/66 or the Diagnostic and Statistical Manual of Mental Disorders, Version-IV (DSM-IV); DSM-IV Major depression; alterations in at least one of the mobility and flexibility tests; patient who lives alone, without family support networks, or needs a caregiver and does not have one.

Minor Criteria: Polypharmacy of three or more drugs with systemic action used in the last six months (Vitamins and minerals are excluded); unintentional loss of more than 4.5 kg of body weight or a decrease greater than or equal to 5.0 % in the last year; body mass index (BMI) less than 23.5 Kg/m^2; mild depression; dependence on -at least- one of the basic and/or instrumental activities of daily living.

Two major criteria, or one major criterion with two minor criteria define frail patients. The presence of dementia alone makes the diagnosis of frailty.

In addition, the prevalence of pressure ulcer was estimated for the variables: age, age group, sex, skin color, schooling, marital status, depth, location of lesions, patient mobility, continence, presence of chronic noncommunicable diseases, nutritional status, and cognitive impairment.

The classification of tissue damage was used to define the depth of the lesions:[9] Grade I: affects the epidermis and leaves the underlying dermis exposed. Grade II: affects the entire skin to the subcutaneous fat. Grade III: reaches the deep fascia. Grade IV: necrosis covers muscle and affects joints and bones.

The Mini Nutritional Assessment (MNA) was used to determine the nutritional status.[10]

Folstein's test and expert judgment were used to assess the presence of cognitive impairment.[11]

Within the statistical analysis, absolute and relative frequencies were used as summary measures. For each variable recorded, it was verified that there were no extreme, inconsistent, or missing values. The descriptive statistical analysis was performed with the SPSS 23 statistical package and represented in frequency tables. The principle of confidentiality of information obtained from the reviewed database and the medical records was respected. The research was approved by the Scientific Council and the Research Ethics Committee.

RESULTS

The mean age was 76.9 years. The most represented age group was 70-79 years (35.2 %; CI: 27.7-44.8), followed by the age group 80-89 years (30.5 %; CI: 21.9-39). There was a predominance of the male sex (52.4 %; CI: 42.9-62.9) and of white people (55.2 %; CI: 45.7-64.8). People with primary schooling (41.9 %; CI: 31.5-50.5) and widowed marital status (39 %; CI: 29.5-48.6) prevailed.

The estimated prevalence of PU in frail elderly was 29.5 % (CI: 21-38.1). (Table 1)

Table 1. Prevalence of pressure ulcers in frail elderly

Pressure ulcer	No.	Prevalence (%)	Confidence interval (95 %)	
			Lower limit	Upper limit
Present	31	29.5	21	38.1
Absent	74	70.5	61.9	79
Total	105	100	-	

Grade II pressure ulcer predominated (51.6 %; CI: 35.5-70.9), followed by Grade I (29 %; CI: 16.1-45.2) according to the depth of the lesions. (Table 2)

Table 2. Distribution of the sample according to depth of lesions

Pressure ulcer	No.	Prevalence (%)	Confidence interval (95 %)	
			Lower limit	Upper limit
Grade I	9	29	16.1	45.2
Grade II	16	51.6	35.5	70.9
Grade III	3	9.7	0.1	22.6
Grade IV	3	9.7	0.1	19.4
Total	31	100		

According to location, there was a predominance of sacral ulcers (38.7 %; CI: 22.6-54.8) and gluteal ulcers (19.4 %; CI: 6.5-32.3). (Table 3) Urinary continence disorders were found in 23.7 % (CI: 19-38.3). It was found that 4.6 % (CI: 2.5-7.2) had mobility, 86.7 % (CI: 80.5-92.3) had reduced mobility, and 8.7 % (CI: 4.2-11.3) had no mobility.

The most frequent chronic non-communicable diseases in frail patients with PU were: arterial hypertension (82.5 %; CI: 70-92.5), type 2 diabetes mellitus (55 %; CI: 40-70), chronic obstructive pulmonary disease (32.5 %; CI: 17.5-47.5), cerebrovascular disease (27.5 %; CI: 15-42.5), and chronic renal disease (20 %; CI: 7.6-32.5).

Table 3. Distribution of the sample according to location of the injuries

Pressure ulcer	No.	Prevalence (%)	Confidence interval (95 %)	
			Lower limit	Upper limit
Sacra	12	38.7	22.6	54.8
Gluteal	6	19.4	6.5	32.3
Scapula	5	16.1	3.2	32.2
Lumbar	4	12.9	3.2	25.8
Heel	2	6.5	0.1	16.1
Trochanter	2	6.5	0.1	16.1
Total	31	100		

According to the distribution of nutritional status, it was corroborated that 61.3 % (CI: 45.2-77.4) of the patients with PU suffered from malnutrition, while 38.7 % (CI: 22.6-54.8) were at risk of malnutrition. (Table 4)

Table 4. Distribution of patients according to nutritional status

		Nutritional Status			Total
		Satisfactory nutritional status	Malnutrition risk	Malnutrition	
No pressure ulcer	Count	1	28	45	74
	% within No pressure ulcer	1.4	37.8	60.8	100
	% del total	1	26.7	42.9	70.5
With pressure ulcer	Count	0	12	19	31
	% within With pressure ulcer	0	38.7	61.3	100
	% of total	0	11.4	18.1	29.5

According to the distribution of cognitive impairment, it was confirmed that 51.6 % (CI: 39.3-68.5) of patients with PU suffered from dementia; 32.3 % (CI: 19.5-48.8) had minimum cognitive impairment; and 16.1 % (CI: 9.8-34.1) had no cognitive impairment. (Table 5)

Table 5. Distribution of patients according to cognitive impairment

		Cognitive impairment			Total
		No cognitive impairment	Minimal cognitive impairment	Dementia	
No pressure ulcer	Count	33	18	23	74
	% within No pressure ulcer	44.6	24.3	31.1	100
	% of total	31.4	17.1	21.9	70.5
With pressure ulcer	Count	5	10	16	31
	% within With pressure ulcer	16.1	32.3	51.6	100
	% of total	4.8	9.5	15.2	29.5

DISCUSSION

The sample studied has demographic characteristics similar to those of other studies on hospitalized elderly patients, in terms of: age,[12,13] predominance of male sex,[4,14] white skin color,[15] and low schooling.[2,16]

The prevalence of pressure ulcer corresponds to the level of care, as well as the reason for admission and hospital stay.[17] *Soto Fernández O and Barrios Casas S*,[16] ed a informed 9.5 % prevalence of this entity in elderly people studied in a home care program.

In his research, *Chacón-Mejía JP*,[4] described a prevalence of PU of 7.34 % in elderly people admitted to an internal medicine service. *Godoy Galindo MV*,[14] describes a prevalence of 19.5 % in the elderly in a hospital in Lima. On the other hand, *Martínez-Velásquez DA and others*[18] found a prevalence of 14.2 % in a geriatric service in Colombia.

According to a study carried out in 2020 by *Santamaría Peláez M and others*[19] , a prevalence of 21.4 % of PU was found in institutionalized frail elderly people. No significant relationship was demonstrated between these two conditions, although it is noteworthy that there were no people with pressure ulcers in the robust and pre-fragile groups. In their study, all persons who presented pressure ulcers were classified as fragile (21.4 %) or dependent (78.6 %).

This study found a prevalence of pressure ulcer of 29.5 %, similar to other studies conducted in the frail elderly.[19,20] The frail elderly is characterized by low physiological reserve and multiple associated diseases, which may increase the risk of developing adverse health outcomes. The acutely ill elderly is characterized as a heterogeneous and vulnerable group due to multiple compromises in biopsychosocial

spheres such as advanced age, decreased functional reserve, multiple chronic diseases, polypharmacy, cognitive impairment, functional compromise, and low social and family support network. These characteristics are associated with increased risk of developing PU as a product of the accumulated burden of aging, frailty and disease.

Grade II ulcers predominated according to the depth of the lesions and sacral location. Similar results were found by *Chacón-Mejía JP*,[4] and *Morales Ojeda and others*.[21] The values of urinary incontinence communicated by *Carbonell Fornés and Murillo Llorente* were similar.[22] The binomial old age-incontinence clearly and significantly facilitates the appearance and development of these lesions.

Poor nutrition is a risk factor for developing pressure ulcer. This is demonstrated in the research conducted by *Leguía Cerna JA*.[23] PUs are both a cause and a consequence of the progressive decrease in patients' nutritional reserves.[24]

Recent studies indicate that patients with dementia present a significant increase in the prevalence of PU.[18,25] The tendency to immobility, flexion postures and spasticity contribute to the propensity to present this complication. *Barr JE and others*,[25] indicate that having dementia has an OR = 3.0, 95 % CI: 1.4-6.3 and P = 0.002 for pressure ulcer development. PUs are frequent in patients with dementia who are at the end of life because patients with minimal cognitive impairment are generally more robust.[26]

Based on the above, it is concluded that the prevalence of pressure ulcers in frail elderly people is high in older adults admitted to the internal medicine ward. Its prevalence increases in the elderly with decreased mobility, dementia, and poor nutrition. The high frequency of disability identified in the topic under analysis shows the importance of the problem.

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Conflicts of Interest

The authors declare that they have no conflicts of interest.

Authors' contributions

Antonio Belaunde Clausell: Conceptualization, data curation, formal analysis, research, methodology, project management, software, supervision, validation, visualization, writing - original draft, writing - revision and editing.
Guido Emilio Lluis Ramos: Data curation, formal analysis, methodology, validation, writing - original draft, writing - review and editing.
Geovanys Consuegra Ivars: Data curation, software, supervision, writing - review and editing.

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