Nutrición Hospitalaria

Caso clínico

Malnutrition and associated factors in elderly hospitalized

A. Lara-Pulido and M. Guevara-Cruz

Departmento de Nutrición. Hospital Medica Sur. Tlalplan. México.

Abstract

Objectives: To investigate the frequency of malnutrition and associated factors in patients over 65 years of age in a hospital.

Methods: We conducted an observational, cross-sectional and descriptive study. Department of Nutritional Support, Hospital Medica Sur, Mexico, we evaluated patients over 65 years of age within the first 24 hours of admission

Results: We evaluated 769 patients, 49% of whom were women and 51% were men, with an average age of 75.3 ± 7.7 years. Among the patients evaluated, 53.6% exhibited an altered nutritional state. In addition, 9% were diagnosed as obese and 15% as overweight. Their risk of malnutrition was determined to be 22.5%, and at the time of admission, 7% were malnourished.

Conclusion: The prevalence of malnutrition in hospitalized patients over 65 years of age was high. Thus, the early diagnosis of patients who are at risk for malnutrition or who are malnourished is essential and allows for prompt treatment.

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Key words: *Malnutrition. Elderly. Mini Nutritional Assessment. Prevalence. Hospitalized.*

DESNUTRICIÓN Y FACTORES ASOCIADOS EN ADULTOS MAYORES HOSPITALIZADOS

Resumen

Objetivos: Investigar la frecuencia de la desnutrición y factores asociados en pacientes mayores de 65 años de edad en un hospital.

Métodos: Se realizó un estudio observacional, transversal y descriptivo. En el departamento de Soporte Nutricional del Hospital Médica Sur, México, DF, se evaluaron los pacientes mayores de 65 años de edad en las primeras 24 horas de su ingreso.

Resultados: En nuestro estudio evaluamos a 769 pacientes, 49% mujeres y 51% hombres, con una edad promedio de 75,3 ± 7,7 años. Encontramos un estado de nutrición alterado en el 53,6% del total. El 9% fueron diagnosticados con obesidad y el 15% con sobrepeso. El riesgo de desnutrición fue del 22,5% y al ingreso el 7% estaban desnutridos.

Conclusión: La prevalencia de un mal estado de nutrición al ingreso es alta. Es indispensable un diagnóstico temprano de los pacientes que se encuentran en riesgo de desnutrición o desnutridos lo cual permitirá el inicio del tratamiento adecuado.

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Palabras clave: *Desnutrición. Adulto mayor. Valoración Nutricional. Prevalencia. Hospitalización.*

Introduction

Malnutrition, which is common in hospitalized patients,[1] influences a patient's response to treatment, risks of complications, costs of healthcare, prognosis, mortality and length of hospital stay.[1] Hospital malnutrition is recognized as a current problem by healthcare professionals worldwide. For over 70 years, it has been known that malnutrition influences the mortality rate of hospitalized patients, which ranges from 20-50%.[1-3] Currently, the population structure in different parts of the world, including Mexico, is described as having a pyramid shape, which reflects a population with progressive aging in developed countries, increased life expectancy, reduced mortality and decreased fertility. The increased growth of the population over age 65 has led to an increased prevalence of chronic diseases.[4] These factors, in addition to the physiological changes that occur during the process of aging, predispose the elderly to suffer from nutritional problems.[5]

The Mini Nutritional Assessment (MNA) is commonly used in hospitals to evaluate malnutrition. It is a simple and inexpensive tool that yields reproducible results and has a sensitivity of 96% and a specificity of 98% in the detection of malnutrition risk

Correspondence: Martha Guevara-Cruz.
Department of Nutritional Support.
Hospital Medica Sur.
Puente de Piedra, 150.
Colonia Toriello Guerra.
CP 14050 Tlalpan. México.
E-mail: marthaguevara8@yahoo.com.mx

among elderly individuals. The MNA is a survey that consists of 18 items divided into four categories: anthropometric parameters, general condition of the patient, dietary intake and subjective assessment. This survey, which takes into account the cognitive function and dietary state of the patient, is also useful for the simple, quick, low-cost and internationally validated assessment of the state of health of individuals over age 65.[6] In addition to being a quick indicator of nutritional status, the MNA can be performed by staff untrained in nutritional assessment. Some studies suggest that malnutrition, as assessed by the MNA, is associated with a higher mortality rate. Thus, consistent use of this nutritional survey would help reduce the number of deaths and health costs associated with malnutrition and would improve the quality of life of the patients.[7]

We sought to investigate the frequency of malnutrition in patients over 65 years of age hospitalized in Medica Sur Hospital in Tlalpan, Mexico using the MNA. Additionally, we also evaluated routine laboratory data and length of hospital stay to describe the profile of elderly individuals with nutritional alterations. Collectively, this analysis will help us design complementary studies and redefine preventive plans and treatment for malnutrition.

Methods

We conducted an observational, cross-sectional and descriptive study in Medica Sur Hospital, which is a third level hospital located in Tlalpan, Mexico City. Between July 2008 and March 2009, we evaluated patients over 65 years of age within the first 24 hours of admission to the hospital using the MNA. The following epidemiological data was collected from the patients: age, sex and reason for hospitalization. Upon admission to the hospital, the MNA was performed on the patients and their primary caretakers, if they had one.

The MNA was applied to the patients in two phases. The screening phase, which is a short and simple method to identify patients at risk for malnutrition, consists of 6 sections, which measure 1 dietetic, 2 anthropometric and 3 overall evaluation parameters. The evaluation phase consists of 12 parameters, which measure 2 anthropometric, 3 global evaluation, 5 dietetic and 2 subjective valuation parameters. The first stage has a maximum total score of 14 points, and the second has a maximum of score 16 points.

If available on file, data on complete blood counts, albumin, cholesterol and triglyceride levels and prior oncological and surgical diagnoses were collected.

Upon addition of the scores from the two MNA phases, the patients were classified into 3 categories: not malnourished (score greater than 23.5); moderately malnourished or at risk for malnutrition (score between 17.5 and 23.5); and severely malnourished (score less than 17.5).[8]

All the anthropometric measurements were taken using standard techniques, which included measurements of height and weight, arm and calf circumference and height from heel to knee.

To assess specific eating problems we used selected questions. The questions related dental disorders, to swallowing problems, cancer patient, surgeries, depression or consumption of alcoholic beverages

Clinical data obtained from the patients' charts included biochemical measurements relevant to nutritional status such as albumin, hemoglobin, total protein, total cholesterol and triglycerides. The tests were performed at the central chemistry lab of Medica Sur Hospital using standard methods.

Statistical analysis

The data were evaluated using SPSS software version 10.0 for Windows (SPSS Inc., Chicago, IL). The constant variables were expressed as the mean ± standard deviation, and the dichotomous variables were expressed in units of frequency and percent. The means of groups were compared using ANOVA. For the constant variables without a normal distribution, nonparametric methods were applied. The comparison between ordinal and categorized variables was made using the Chi-square test. To determine the association between the diverse parameters and the results of the MNA, Spearman's rank correlation coefficient was used. P-values of < 0.05 were considered statistically significant.

Results

We evaluated 769 patients, of whom 49% were women and 51% were men, with an average age of 75.3 ± 7.7 years and an average body mass index (BMI) of 25.9 ± 4.28 kg/m². Among these patients, 53.6% exhibited an alteration in their nutritional state within the first 24 hours after admission to the hospital, and 22.5% of them were at risk for malnutrition, 7% were already undernourished, 9% were obese and 15% were overweight.

The patients were then classified according to their nutritional state, as well as according to BMI, obesity and overweight. Based on the results of the MNA, we determined whether a patient was at risk for malnutrition. We found that older, malnourished patients had significantly lower levels of albumin and hemoglobin compared to patients who were not malnourished. However, triglyceride and cholesterol levels were higher in overweight and obese patients. Strikingly, patients with malnutrition and obesity remained approximately 3 more days in the hospital than did patients who were not malnourished (p = 0.0001; table I). We also observed significant differences between undernourished and healthy patients, the undernour-

Table I
Demographic, anthropometric and biochemical results

	No risk n = 357	Malnutrition risk n = 173	Undernourished n = 54	Overweight n = 116	Obesity n = 69	P^2
Age	74.5 ± 7.7	77.3 ± 8.7	79.9 ± 8.2	73.2 ± 6.3	73.9 ± 7.7	0.0001
Sex						
Male	56.3% (201)	46.2% (80)	57.4% (30)	50.0% (58)	52.1% (36)	0.880
BMI	25.3 ± 3.6	24.4 ± 3.8	22.5 ± 4.3	27.2 ± 1.4	32.9 ± 3.5	0.0001
Albumin	3.3 ± 0.7	3.2 ± 0.7	2.4 ± 0.6	3.1 ± 0.6	3.4 ± 0.7	0.037
Hemoglobin	13.78 ± 2.6	12.0 ± 2.4	10.7 ± 1.9	13.3 ± 2.5	12.6 ± 2.9	0.0001
Total protein	6.3 ± 0.9	6.1 ± 1.2	5.6 ± 0.6	5.8 ± 1.1	6.6 ± 1.2	0.239
Colesterol	177 ± 40.9	170.5 ± 47	170 ± 40	331 ± 170	183 ± 90	0.017
Triglycerides	195.7 ± 93	169.4 ± 118	72 ± 40	206 ± 109	274 ± 161	0.457
Days hospital stay	3.6 ± 2.4	5.1 ± 4.7	6.4 ± 1.8	3.3 ± 1.8	6 ± 5.2	0.0001

Variables: mean ± SD; ²analysis was performed with ANOVA when the distribution was not normal, logarithmic transformation was performed first.

ished patients had absence of dental pieces, alteration of swallowing and depression more than healthy patients . It is important to note that 46.3% of patients with malnutrition suffered from depression (table II).

Discussion

The extent and magnitude of malnutrition in hospitalized elderly patients just begins to be understood. Our study revealed that 53.6% of elderly patients admitted to Medica Sur Hospital in Tlalpan, Mexico had a poor nutritional state. These findings are in agreement with studies conducted 25 years ago, which showed that 44-50% of elderly patients exhibit signs of malnutrition.[2] Despite the greater awareness by healthcare staff and improvements in the assessment of malnutrition and in nutritional support techniques, the prevalent frequency of undernourishment in hospitalized elderly patients remains at the same level. The persistence of this problem seems to reflect the increasing complexity of the current conditions and the maintenance of unfavorable attitudes, which do not occur in the educational and health administration systems.[5,9]

One interesting finding of our study was that patients who exhibited signs of malnutrition were hospitalized for a greater length of time than patients who were not malnourished, which is consistent with previously published studies.[3,9] These results make it clear that a good nutritional state is important to maintain proper health. Thus, it is fundamental that a patient's nutritional state is assessed upon admittance to a hospital.[9] As such, early identification of elderly patients who are at greater risk for malnourishment would allow for proper intervention upon hospital admission.[5]

Hospitalized patients are nutritionally vulnerable due to several factors, including exploratory studies that require frequent fasting, delayed nutritional support, presence of a catabolic state or symptoms and manifestations due to ongoing disease and a deficient immune system, which also increases susceptibility to infection. These factors make it almost impossible for a patient to cover his/her nutritional requirements, resulting in the use and depletion of nutritional reserves that subsequently lead to malnutrition. Additionally, the nutritional evaluation is not a routine part of a patient's clinical assessment in most hospitals.[2,5] Additional factors associated with healthcare institutions also promote the high prevalence of malnutrition among hospitalized elderly patients, including the increase in ongoing disease due to ignorance of a patients necessities, lack of personnel specialized in nutrition and lack of tools or material resources that permit the evaluation and proper treatment of malnutrition.[10]

Conclusion

The prevalence of malnutrition in hospitalized patients over 65 years of age was high. Thus, the early diagnosis of patients who are at risk for malnutrition or who are malnourished is essential and allows for prompt treatment. The MNA is a useful tool to identify the type of malnutrition suffered by an individual and its causes, which in turn is helpful to provide comprehensive care for this particularly vulnerable segment of the population.

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Table II
Absences of dental pieces, consumption of alcoholic beverages, cancer patients, surgeries, alteration of swallowing and depression in the different groups of patients

	No risk n = 357	Malnutrition risk n = 173	Undernourished n = 54	Overweight n = 116	Obesity n = 69	P^2
Dental disorders	23.5 (84)[1]	41.0 (71)	50.0 (27)	62.9 (73)	40.5 (28)	0.003
Consumption of alcoholic beverages	32.7 (117)	35.8 (62)	22.2 (12)	22.4 (26)	20.2 (14)	0.481
Cancer patient	11.2 (40)	17.9 (31)	29.6 (16)	12.0 (14)	11.5 (8)	0.414
Impaired swallowing	0	15 (26)	15 (8)	0	4.3 (3)	0.030
Surgeries	41.7 (149)	41 (71)	57.4 (31)	32.8 (38)	47.8 (33)	0.015
Depression	1.9 (7)	29.5 (51)	46.3 (25)	17.2 (20)	8.7 (6)	0.0001

[1]Variables: positive percentage (n); [2]analyses were performed chi-square when the distribution was normal, if no performed fisher F-test.

Author contributions

A. L. P. and M. G. C. conceived and designed the study and drafted and revised the manuscript. Both authors read and approved the manuscript. A. L. P. recruited the patients for the study and performed the medical examinations. M. G. C. analyzed and interpreted the data.

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