

Prevalence of malnutrition in an Internal Medicine service

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Abstract

A nutritional assessment was carried out of 444 patients with an average age of 51, all of whom were admitted to the medicine service of the Hospital de Angra. Anthropometric and biochemical parameters were used for the assessment.

The anthropometric parameters used were skinfold thickness and mid-upper arm circumference, and the biochemical ones were plasma albumin and transferrin.

The prevalence of malnutrition was 55%, with 48.7% for mo-

derate malnutrition and 6.3% for severe malnutrition.

Marasmus-type malnutrition was prevalent (36%).

The most commonly associated pathologies were neoplasias, cerebral vascular accidents, chronic obstructive pulmonary disease, chronic alcoholism and chronic renal insufficiency.

Key Words: anthropometric parameters, biochemical parameters.

Introduction

Hospital malnutrition is associated with an increase in morbidity and mortality, hence the importance of its detection and treatment.^{1,2,3,4}

More accurate methods for detecting malnutrition (Isotopic Studies, Computed Axial Tomography, Magnetic Resonance) are costly and technically complex to execute.^{1,2} In clinical practice, anthropometric and biochemical parameters are the most commonly used.^{1,3,4,5,6,7}

Anthropometric parameters evaluate the somatic compartment of the body, while biochemical parameters evaluate the visceral compartment.^{3,4}

Our study of patients admitted to the Medicine Service of Hospital de Angra sought to: determine the prevalence of malnutrition, classifying it by degree and type, and verify the pathologies most frequently associated with it.

Material and methods

The study involved the nutritional assessment of 444 patients with an average age of 51 years, admitted between the months of January and May 1993.

Anthropometric and biochemical parameters were used.

The anthropometric parameters used were tricipital skinfold thickness (TST) and mid-upper arm circumference (MUAC).^{3,4}

Tricipital skinfold thickness was measured with an adipometer, on the non-dominant arm, halfway between the acromion and the olecranon. Three measurements were made, taking the mean value of the two closest results as the final value³.

The mid-upper arm circumference was calculated by the formula:³

$$M.U.A.C.cm = A.C.cm - (K \times TST \text{ cm})$$

M.U.A.C – mid-upper arm circumference

A.C. – arm circumference

$$K = 3.14$$

TST = tricipital skinfold thickness

The values determined, both for tricipital skinfold thickness and mid-upper arm circumference, were expressed as the percentage deviation in relation to the standard values: percentages of between 60% and 90% of the standard signified moderate malnutrition and percentages below 60% signified severe malnutrition.³

The biochemical parameters used were plasma albumin and transferrin.^{3,4} For albumin it was considered that values between 21 and 31.5 g/L corresponded to moderate malnutrition and values below 21 g/L to severe malnutrition.^{3,4} For the transferrin, values between 100 and 150 mg/100 mL corresponded to moderate malnutrition and values below 100

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TABLE I

Prevalence of undernourished patients with moderate and severe malnutrition, and malnutrition of the marasmus, mixed, and Kwashiorkor types

	No.	%
Undernourished	244	55
Moderate malnutrition	216	48.7
Severe malnutrition	28	6.3
Marasmus malnutrition	160	36
Mixed malnutrition	64	14.5
Kwashiorkor malnutrition	20	4.5

mg/100 mL to severe malnutrition.^{3,4}

The malnutrition was considered to be of the marasmus type whenever a change was observed in the anthropometric parameters with normal biochemical parameters; of the Kwashiorkor type in cases of alteration of the biochemical parameters with normal anthropometric parameters, and of the mixed type with alterations in both types of parameter.³

In patients with hepatic failure, nephrotic syndrome, chronic inflammatory disease of the intestine, or other pathologies with decreased synthesis or increased loss of proteins, we did not evaluate the biochemical parameters in the nutritional assessment (3 cases.) We considered all the remaining patients that presented deviations in relation to the standard values in at least one of the parameters studied (TST, MUAC, albumin and transferrin) to be malnourished.

Statistical analysis: in relation to the prevalence of malnutrition by gender, the comparison test of two frequencies was applied at a confidence level of 95%; percentage calculations were applied in relation to the remaining parameters to be analyzed

Results

Of the total sample group, 55% of the patients were malnourished; 48.7% had moderate malnutrition and 6.3% had severe malnutrition. The prevalence of malnutrition of the marasmus type was 36%, of the mixed type 14.5% and of the Kwashiorkor type 4.5% (Table 1).

In 84% of the patients, the diagnosis of malnutrition was based on the association of two or more parameters and in 16%, on only one parameter.

TABLE II

Undernourished patients. Distributive table of prevalences of anthropometric and biochemical parameters, isolated and in association

Parameters	No.	%
TST	14	5.7
MUAC	12	4.9
TST + MUAC	134	54.9
A	3	1.3
T	10	4.1
A + T	7	2.9
TST + MUAC + A + T	16	6.6
TST + MUAC + A	20	8.2
TST + A	12	4.9
MUAC + A	12	4.9
MUAC + T	4	1.6
Totals	244	100

TST = Tricipital skinfold thickness; MUAC = mid-upper arm circumference
A = albumin; T = transferrin

TABLE III

Associated pathologies

Associated pathologies	No.	%
Neoplasias	70	28.6
CVA sequelae	32	13.1
COPD	26	10.7
Chronic alcoholism	16	6.6
Chronic renal failure	12	4.9
Others	88	36.1
Totals	244	100

The most frequent association was that between tricipital skinfold thickness with mid-upper arm circumference, present in 54.9% of the cases (Table 2).

Neoplasias were the most frequent associated pathologies (28.6%), followed by CVA sequelae (13.1%), COPD (10.7%), chronic alcoholism (6.6%) and chronic renal failure (4.9%) (Table 3).

TABLE IV

Prevalence of malnutrition by gender

Gender	Totals	Malnourished	%
Male	228	125	54.8
Female	216	119	48.8

In relation to the prevalence of malnutrition by gender, the application of the comparison test of two frequencies at a confidence level of 95% to the levels of prevalence found for the male (54.8%) and female genders (48,8%) did not show any statistical difference between these percentages (Table 4).

Discussion and conclusions

The criterion we used to diagnosis the malnutrition, considering all the patients who presented deviations in relation to the standard values in at least one parameters as malnourished and excluding cases with decreased synthesis or increased loss of proteins, is the same as that used in the majority of studies that we consulted, although some only consider patients with deviations in relation to the standard values in at least two parameters as malnourished.^{2,3,4,8,9} In our series, the malnutrition diagnosis was based on one parameter in only 16% of the cases, whereas the remaining 84% were based on the association of two or more parameters.

There are limited accounts of the prevalence of malnutrition in patients admitted to Medicine services in the literature, as reference is more often made to overall hospital prevalence.

For this prevalence, the referenced values range from 33% to 86%.^{2,8,9,10,11} The value of 55% of our series, although lower than the maximum values referred to in literature for global hospital prevalence, still appears to us to be significantly high, justifying the nutritional assessment of all the hospitalized patients, especially those with pathologies commonly associated with malnutrition. The pathologies we encountered most commonly associated with malnutrition were neoplasias (28.6%), CVA sequelae (13.1%), COPD (10.7%), chronic alcoholism (6.6%) and chronic renal failure (4.9%). These percentage values are in line with those we found in the literature that we were able to access.^{6,8,11,12,13,14,15,18}

We also consider important to mention that in our

series, malnutrition was of a moderate degree in the vast majority of malnourished patients (48.7%), and severe in only 6.3% of cases. ■

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