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Presence of comorbidities, polypharmacy, muscle wasting, and nutritional status in geriatric patients with obesity

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ABSTRACT

Changes experienced by elderly women contribute to physiological and functional impairment, which increases the risk of morbidity and mortality. **Objective.** To determine the presence of comorbidities, polypharmacy, and muscle wasting and nutritional status in obese geriatric patients. **Material and methods**: 63 obese geriatric patients were included in this research, and their files were acquired from the "Hospital de la Mujer" in Morelia, Michoacan, Mexico. The results obtained from this information were exact amounts of comorbidities, consumed drugs, and nutritional status. The nutritional status was assessed by the Mini Nutritional Assessment. Muscle wasting was determined by arm circumference and calf circumference. **Results:** The age range of the participants was 65 ± 4.3 years. The participants presented an average of 2.49 ± 2.30 diseases per patient and showed polypharmacy. The muscle wasting registered 21% according to the calf circumference and 43% by arm circumference. Mini Nutritional Assessment results showed that 65% of

RESUMEN

Los cambios que experimenta la mujer en la tercera edad contribuyen al deterioro fisiológico y funcional aumentando el riesgo de morbimortalidad. **Objetivo.** Determinar la presencia de comorbilidades, polimedicación, depleción muscular y estado nutricional en pacientes geriátricas con obesidad. **Material y métodos.** Se incluyeron 63 pacientes geriátricas con obesidad del Hospital de la Mujer de Morelia. Se obtuvo información sobre el número de comorbilidades, medicamentos consumidos y el estado nutricional evaluado con el *Mini Nutritional Assessment* (MNA). Se determinó la depleción muscular mediante la circunferencia braquial (CB) y de pantorrilla (CP). **Resultados.** El intervalo de edad de las participantes fue de 65 ± 4.3 años de edad. Un promedio de 2.49 ± 2.30 enfermedades por paciente y polimedicación. La depleción muscular se registró en el 21% de acuerdo a la CP y en el 43% por CB. Mediante el MNA, el 65% de las adultas mayores está en riesgo nutricional, 14% tienen malnutrición y 21% buen estado nutricional. Por los indicadores bioquímicos solo se

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older female adults are at nutritional risk, 14% are malnourished, and 21% reflect a good nutritional status. Biochemical indicators found alterations in cholesterol, hemoglobin, and total proteins. **Conclusion:** The results of this study show that comorbidities and polypharmacy have a direct influence on the nutritional status. Elderly patients with obesity in the "Hospital de la Mujer" will have negative health consequences, reduced functional status, and deteriorated health-related quality of life. (REV MEX ENDOCRINOL METAB NUTR. 2015;2:171-5)

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encontró alteración en el colesterol, hemoglobina y proteínas totales. **Conclusión.** Los resultados de este estudio muestran que las comorbilidades y polifarmacia influyen directamente en el estado nutricional. En las adultas mayores con obesidad del Hospital de la Mujer tendrá consecuencias negativas para la salud, se reducirá el estado funcional y deteriorará la calidad de vida.

Palabras clave: Comorbilidades. Polimedicación. Depleción muscular. Estado nutricional. Pacientes geriátricas. Obesidad.

INTRODUCTION

Mexico has seen an unprecedented demographic change in the rapid increase of in the aging population as a result of a decrease in birth rates and increased life expectancy[1]. According to National Population Council (CONAPO), there are currently 8.5 million people aged 60 years or over, and by 2050 this will increase by 244%[2].

Aging is a process characterized by a loss of vitality, which implies a progressive increase in vulnerability to aggression and leads, ultimately, to death[3]. When age progresses, mortality increases owing to biochemical changes in body tissue composition, progressive reduction of the functional capacity of organs, decreased responsiveness of adaptation, and increased susceptibility and vulnerability to disease[4].

Therefore, the geriatric patient is defined as an elderly person, especially fragile to kinds of aggression, with multiple chronic conditions, and usually showing functional, physical, and/or psychological limitations. Moreover, these people often have added social problems and very often behavioral disorders[5]. The prevalence of chronic degenerative disease in these patients is one in three, and 24.5% are women. Gender-related differences have been reported with respect to drug use, disability, and malnutrition, with females having higher such prevalences in some reports[6-8].

MATERIAL AND METHODS

This was a clinical, transversal, and prospective study. It was conducted in the clinics of Nutrition and Endocrinology of the Hospital de la Mujer in Morelia, Mexico. The data were collected in the period February to June 2014. A total of 63 adults over 60 years old were recruited, all with an obesity diagnosis, according to BMI NANHES III, and this was also calculated by dividing the resident's weight by the square of height in meters. We excluded those elderly women with diabetes mellitus type 2 diagnosis, and those who's clinical progress was incomplete, or those not wishing to enter the study. Medical diagnoses were previously established by clinical endocrinology and internal medicine of the aforementioned Hospital on admission, including identification of the drugs consumed at the time of the evaluation. For assessment of the muscle wasting, anthropometric indicators were used, that included the lower arm circumference of 28.3 cm in elderly aged 60-69 years and less than 27.4 in those of 70-79 years according to NANHES III, and a lower calf circumference of 31 cm[9]. The Mini Nutritional Assessment Short-Form (MNA) was used in assessing the

elderly women's nutritional status (0-30 points). A score less than 17 points indicates malnutrition, 17.0-23.5 a risk for malnutrition, and more than 23.5 points indicates a good nutritional status[10,11].

Statistical analysis was performed with the statistical package SPSS v. 21.0 for Windows. Descriptive statistics were generated for all study variables, including average ± standard deviation for continuous variables, relative frequencies for categorical variables, and chi-square test for determinate correlation ($p < 0.05$).

The local ethics committee of the Faculty of Medical and Biological Sciences "Dr. Ignacio Chávez" UMSNH, and Committee on Bioethics and Research of Hospital de la Mujer approved the study. An informed consent was acquired from all participants.

RESULTS

A total of 63 elderly women with obesity were included in this study; the age was between 65 + 4.3 years. This research presents evidence that according to the sociodemographic characteristics of the study participants, and with reference to low socioeconomic status, staged according to the National Institute of Statistics, Geography and Informatics (INEGI) based in the daily minimum wage, the "lower class" (47.6%, 30/60) present predominance of the "lower middle class" (22.2%, 14/63), and "extreme poverty" (30.1%, 19/63). The education level was low, since 31.7% (20/63) had no formal education, more than half (52.3%, 33/63) had only completed the basic level, corresponding to primary and secondary, and only 15.8% (10/63) has completed secondary and higher education. In terms of occupation, the majority is dedicated to household (69.8%, 44/63) and trade (28.5%, 18/63). The predominant marital status was "married" (58.7%, 37/63), followed by "single" (17.4%, 11/63) and "widow" (15.8%, 10/63). Table 1 shows the descriptive characteristics of the patients. According to the number of comorbidities presented by each participant, 48% (30/63) has more than three, of which the most common were gastrointestinal disorders (34%, 53/63), hypertension (21%, 33/63), and bone damage (21%, 33/63). The average consumption of drugs was 3.46 ± 1.60, of which the most common were antacids (20%, 31.63) analgesics (24%, 37/63), anticoagulants (21%, 32/63), lipid lowering (16%, 25/63), and hypertensive (13%, 20/63). When evaluating anthropometric indicators, muscle wasting was found in 21% of geriatric patients (13/63) by calf circumference indicator (CC). By the arm circumference (AR), wasting is shown in 43% (27/63). For assessment the nutritional status, MNA was used, which showed that most elderly participants have nutritional risk of 65%, followed by a good nutritional status of 21%, and poor nutrition 14%. The assessment of nutritional status through biochemical data found that, according to the levels of hemoglobin < 12 g/dl, 17.4% (11/63) have anemia, and total protein (6.4-8.3 g/dl) was found depleted in 84.1% (58/63) of the geriatric patients. Serum albumin (< 3.5 g/dl) did not show abnormalities, since only 9.5% (6/12) showed mild malnutrition. Also, it was observed that the concentration of cholesterol was altered in 62% (38/63) of elderly women showing higher than the therapeutic target values (< 200 mg/dl).

Table 1. Anthropometric, clinical, and laboratory characteristics in geriatric patients included in this study

Variable		(n = 63)
Age		65.01 ± 4.43
Actual weight	(kg)	73.93 ± 11.05
Height	(cm)	1.51 ± 0.05
BMI	(kg/m^2)	32.60 ± 4.34
Arm circunference	(cm)	29.22 ± 4.69
Calf circumference	(cm)	32.88 ± 5.87
Comorbidities	(n)	2.49 ± 2.30
Drugs	(n)	3.46 ± 1.60
Cholesterol	(mg/dl)	208.31 + 42.51
Hemoglobin	(g/dl)	13.67 ± 1.60
Seric albumin	(g/dl)	4.66 ± 1.14
Total protein	(g/dl)	7.56 ± 1.09
Lymphocytes	(K/ul)	7.34 ± 1.95

$\bar{X}$ ± *SD*= average ± standard deviation.

DISCUSSION

This research shows that elderly patients with obesity at the Hospital de la Mujer, based on the clinical and

Table 2. Frequency and percentage of biochemical values and relationship with nutritional status assessed by the Mini Nutritional Assessment

	Mini Nutritional Assessment (MNA)			
	Poor nutrition	Nutritional risk	Normal nutrition	Sig.
Cholesterol				0.518
– Off therapeutic target < 200 mg/dl	7 (11.1%)	26 (41.3%)	7 (11.1%)	
– On therapeutic target > 200 mg/dl	2 (3.2%)	15 (23.8%)	6 (9.5%)	
Hemoglobin				0.527
– With anemia < 13.5 g/dl	1 (1.6%)	10 (15.8%)	0 (0%)	
– Without anemia > 13.5 g/dl	8 (12.6%)	31 (49.2%)	13 (20.6%)	
Serum albumin				0.512
– Muscle wasting < 3.5 g/dl	(0%)	5 (7.9%)	1 (1.6%)	
– Normal > 3.5 g/dl	9 (14.3%)	36 (57.1%)	12 (19%)	
Total proteins				0.551
– Malnutrition < 8.3 g/dl	7 (11.1%)	36 (57.1%)	10 (15.9%)	
– Normal >8.3 g/dL	2 (3.2%)	5 (7.9%)	3 (4.8%)	

Xi square statistical test. Statistical significance $p < 0.05$.

dietary history, have particular sociodemographic characteristics; according to the educational level, the highest percentage has completed only the basic level, and this is similar to what we found in Mexicans by Shamah, et al (2008). The socioeconomic level corresponds to the "lower class", where the "poor class" prevailed, and marital status is "married", with dedication to housework.

According to anthropometric indicators, it appears that most geriatric patients have obesity coupled with short stature. Also, when evaluating arm circumference (29.22 ± 4.69) and calf (32.88 ± 5.87), it is shown that the average percentages are similar to those of other studies[12,13].

Regarding the number of drugs used (3.46 ± 1.69), we find that this is lower than other populations of older adults. The number of comorbidities present is similar to the average of other investigations (2.49 ± 2.39)[12]. In relation to laboratory values (Table 2) total cholesterol is out of control, and for therapeutic goals to correlate with nutritional status it was observed that most (26/63, 41.3%) are at nutritional risk, suggesting that alterations in this indicator lead to a greater nutritional risk. The presence of anemia in the population of older adults in this study compared with the report of the National Health and Nutrition Survey 2012[14] is slightly higher in our sample, which represents a serious health problem public since according to the World Health Organization, the prevalence must be less than 5.0%[15]. Albumin values in this study reflected that only 9.5% (6/63) of the older adults showed wasting, indicating that it is a late indicator of malnutrition as to correlate with nutritional status, the highest percentage of nutrition risk (36/63, 57.1%), confirming the theory that this alone is not an ideal marker to reflect recent changes in a patient, especially in the case of the elderly. Lean mass decreases by factors associated with aging such as decreased physical activity, decreased intake, hormonal changes, concurrent chronic degenerative diseases, and disorders in digestion and incorporation of nutrients, and often changed easily by states of acute inflammation of infectious or degenerative origin[16]. With respect to total protein being strongly associated with nutritional risk, the participants who are malnourished by this parameter also show nutritional risk by the MNA shown. Finally, to assess the state of the immune system by total lymphocyte count, most are within the parameters of normal; however, contrasting against MNA, 57.1% have nutritional risk.

CONCLUSION

The results of this study show that comorbidities and polypharmacy directly influence nutritional

status. In elderly patients with obesity in the Hospital de la Mujer, this will have negative health consequences, can reduce functional status, and deteriorate health-related quality of life.

DECLARATION OF INTEREST

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