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FUNCTIONAL ASSESSMENT OF OLDER OBESE PATIENTS CANDIDATES FOR BARIATRIC SURGERY

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ABSTRACT – ***Context*** **-** Obesity in the elderly is associated with exacerbation of functional decline (dependency), that occurs with aging, because of decreased muscle mass and strength, and increased joint dysfunction. Consequently, there is progressive loss of independence, autonomy, chronic pain and impaired quality of life. The weight loss can bring benefits in all these aspects, especially when accompanied by exercises. Elderly patients with morbid obesity may be submitted to surgical treatment, taking into account that the massive weight loss, eventually caused by bariatric surgery, may exacerbate the loss of muscle mass and nutritional complications that may bring harm to the overall health and quality of life of these patients. The functional assessment of elderly patients, candidates for bariatric surgery and the extent to which surgery can bring benefits to the patients, in the field of functionality, has still to be determined. ***Objective*** **-** To describe profile functionality in obese elderly referred to a bariatric surgery program. ***Methods*** **-** Patients with age ≥60 and BMI ≥35 underwent comprehensive geriatric assessment that evaluates co morbidities, medication use, ability to perform basic activities of daily living and instrumental activities of daily living, and the "Timedupandgo" test to evaluate mobility, whose cut-off point was ≤10 seconds. Statistical analysis was performed in order to see if there is a positive correlation of dependency with BMI and age (over or under 65 years). ***Results*** **-** Forty subjects have completed evaluation. The mean age was 64.1 years (60-72) and 75% were women. They had an average weight of 121.1 kg (72.7-204) and a mean BMI of 47.2 kg/m^2 (35.8-68.9). 16 patients (40%) have shown dependency for activities of daily living, 19 (47,5%) for instrumental activities of daily living and 20 patients (50%) had a "Timedupandgo" test over 10 seconds. Statistical analysis (t-Student, Mann-Whitney, Binary Logistic Regression) has shown positive correlation of dependency in activities of daily living for BMI >49 kg/m^2, dependency in instrumental activities of daily living for BMI >46,5 kg/m^2, and "Timedupandgo" test greater than 10 seconds for BMI >51 kg/m^2 (P<0,05). No dependency difference was observed for patients over or under 65 years age. ***Conclusion*** **-** Functional decline is observed in almost half of the morbid obese patients over 60 years old. It is related to increasing BMI (BMI >46,5 kg/m^2) but not related to age (60 to 65 years or over 65 years). Functional decline should be considered a co-morbidity in the elderly obese patients and should be assessed before bariatric surgery in this population.

HEADINGS – Morbit obesity, surgery. Bariatric surgery. Health of elderly.

INTRODUCTION

Obesity and aging are two of the most challenging public health problems today[16]. In Brazil, according to the Brazilian Institute of Geography and Statistics (IBGE), the prevalence of obesity in the population is around 13%, being slightly higher in females, with higher prevalence in South and Southeast, primarily affecting the population of low income. In Brazil, as well as in other developing countries, elderly is considered people with 60 years or more. In our country, the population over 60 has doubled during the past 20 years, reaching about 20 million people. The prevalence of overweight and obesity increases with age, and begins to decrease from 55 years for men and 65 for women. Above 65 years the prevalence of obesity is 8.7% among men and 16.1% among women and this difference is even more pronounced in older age groups[3].

The goals of treatment of obesity may vary according to age groups: while in young people the prevention of systemic complications and decreased mortality risk may be paramount, in the elderly the focus is on the increase in survival without disability, reduced musculoskeletal co-morbidities and improving quality of life[1, 7]. It is therefore important to assess co morbidity in these patients and their profile of functional dependence[8, 12], before choosing the best treatment for each of them[9]. In the other hand, massive weight loss in the elderly population is associated to the risk of loss of muscle mass (sarcopenia) if not combined to regular exercises, loss of mineral bone density, osteoporosis and increased risk of fractures[11].

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In cases of severe obesity, bariatric surgery for adult patients is well accepted and has its well-defined indications. Not so with the indication for elderly patients. It is recommended, however, that patients over 65 years should be assessed individually and carefully to establish the risk/benefit of the surgical treatment[4, 15, 18].

It is important though to understand how functional dependence affects life quality in this population and how bariatric surgery could benefit these patients without increasing the risks associated to massive weight loss. The objective evaluation of functionality in morbidly obese elderly patients and the benefit of bariatric surgery on this field have yet to be determined.

The aim of this study was to describe profile functionality in obese elderly referred to a bariatric surgery program

METHODS

This is a cross-sectional study that has analyzed by interview, physical exam, laboratory tests and chart revision, patients who were in the bariatric surgery program at "Hospital das Clínicas", University of São Paulo School of Medicine. Patients with 60 years or more by the time of the analysis were included. The analysis included weigh, BMI, the most common co morbidities (hypertension, diabetes, dyslipidemia, obstructive sleep apnea, congestive heart failure, coronary artery disease and orthopedic problems), use of medication for chronic disease and functional tests (capacity to perform activities independently or with help) for basic activities (Katz questionnaire) and instrumental activities of life (Lawton questionnaire). Basic activities (Activities of Daily Living - ADL) include: to have bath, to clothe, to toilette, to get out of bed, to control urine continence and to eat. Instrumental activities of Daily Living (IADL) include: to use the telephone, to go out using transportation, to shop, to cook, to keep the house, to fix little things, to wash and iron the clothes, to take the own medicines at correct dose and time and to take care of finances (Figure 1)[2]. The "Timedupandgo" test (TUG) was used to assess mobility. It uses the time that a person takes to rise from a chair, walk three meters, turn around, walk back to the chair and sit down. The person is expected to use any mobility aids that they would normally require and it is frequently used in the elderly population. The scores of ten seconds or less indicates normal mobility[14]. Statistical analysis was performed in order to see if there was a positive correlation of dependency (Kats, Lawton and TUG) with BMI and age (over or under 65 years).

Activities of Daily Living ADLs	Instrumental Activities of Daily living IADLs
Feeding	Using the telephone
Continence	Shopping
Transferring	Preparing food
Toileting	Housekeeping
Dressing	Doing laundry
Bathing	Using transportation
	Handling medications
	Handling finances

FIGURE 1. Comparision of Katz (activities of daily living - ADL) and Lawton (instrumental activities of daily living - IADL)

RESULTS

Forty subjects have completed evaluation. The mean age was 64.1 years (60-72) and 75% were women. They had an average weight of 121.1 kg (72.7-204) and a mean BMI of 47.2 kg/m^2 (32.8-68.9). Population characteristics, co morbidities and frequency of functionality disorders are in tables 1, 2 and 3. Statistical analysis (t-Student, Mann-Whitney, Binary Logistic Regression) has shown positive correlation of dependency in ADL (Katz) for BMI >49 kg/m^2, dependency in IADL (Lawton) for BMI >46,5 kg/m^2, and TUG greater than 10 seconds for BMI >51 kg/m^2 (P<0,05). No dependency difference was observed for patients over or under 65 years age.

TABLE 1. Demographics

Population characteristics (n=40)	
Age (years)	64.15 ± 0.61
Weight (kg)	121.09 ± 4.03
BMI (kg/m^2)	47.28 ± 1.29
35-50	26 (65%)
>50	14 (35%)

TABLE 2. Co-morbidities

Co-morbidities (n=40)	
Hipertension	38 (95%)
Type II DM	21 (52.5%)
Dyslipidemia	29 (72.5%)
Coronary dis.	6 (15%)
Cong. Heart Fail.	6 (15%)
Stroke	2 (5%)
Obstr. Lung Dis	7 (17.5%)
Cancer (cured) ***	1 (2.5%)
Chron Ren. Fail.	2 (5%)
Medicines (regular)	7.05 ± 0.73
Daily pain	31 (77.5%)
Aux walk equip.*	10 (25%)
Falls **	8 (20%)

* cane, crutch, walker; ** last 6 months; *** prostate

TABLE 3. Functionality

Funcionality	
dependent for ADL	16 (40%)
dependent for IADL	19 (47.5%)
TGUG (s)	11.3 (mean)
>10s	20 (50%)

ADL: activities of daily living; IADL: instrumental activities of daily living

DISCUSSION

The increase in life expectancy brought an increased prevalence of chronic diseases, among them obesity, which, besides its known impact on health, causes significant decrease in quality of life and functional independence of individuals[10].

Regarding functionality, the limited mobility increases progressively with increasing body mass index (BMI) above 30 kg/m^2. Obese elderly over age 70 have a high incidence of functional limitation and the risk of institutionalization in elderly patients with BMI ≥35 kg/m^2 is significantly higher. The intentional loss of weight, in turn, can cause an improvement of functional capacity, running speed, strength and balance in obese elderly. Obesity in this population, particularly its visceral component, is associated with higher incidence of sarcopenia, defined as a syndrome characterized by progressive and generalized loss of muscle mass and strength, increasing the risk of disability, worse quality and therefore reduce the expectation of life[19].

In this matter, the benefits of weight loss in the elderly include the improved functional capacity and ability of activities of daily living, and reduced musculoskeletal co-morbidities[11]. In this series, half of the patients presented with some impairment of functionality, that increased with BMI (above 46,5 kg/m^2 for Lawton, above 49 kg/m^2 and above 51 kg/m^2). No difference though was observed in patients over or under 65 years, showing that functionality is more related to BMI than to age, at least in our population. Based on this observation, we believe that the higher BMI, the most benefit an elderly patient will achieve after a weight loss surgery and that a high BMI rather than age should be used for a strong indication of surgical treatment in the elderly. More data is necessary to asses if in the elderly a super-obese is a patient with BMI ≥50 kg/m^2 or less, according to functional co-morbidity.

In the other hand, massive weight loss in the elderly is associated to some risks that include loss of muscle mass, loss of mineral bone density, osteoporosis and increased risk of fractures. It seems clear that the goals of weight loss after bariatric surgery in the elderly should not be the same as in an adult. The optimal weight loss should address improvement in obesity related co-morbidities (including functionality), an overall reduction in medication requirements, but minimizing the risks of massive weight loss. Data are not available to determine the optimal surgical procedure to achieve these goals[11].

Gastric Bypass is the most popular bariatric procedure, with good long term weight loss and control of co-morbidities, but associated with some degree of nutritional deficiencies that could be more deleterious for the elderly population. Sleeve gastrectomy has been proposed as a good option for these patients, once the duodenum and the small bowel are not bypassed, decreasing the incidence of nutritional complications[6]. Nevertheless, prospective controlled trials should be performed, in order to determine the best surgical procedure for these patients.

According to surgical risks, morbidity and mortality of bariatric surgery are higher in patients over 65 years[18]. A survey of American database (National Hospital Discharge Survey and National Inpatient Survey) analyzed about 25,000 bariatric operations and showed a mortality of 3.2% in the elderly population (from 0.2 to 0.7% in the younger population) and adverse effects in 32.3% (against 21.6% in younger)[5]. Nelson et al.[13] reported mortality rate of 4% and the risk of surgical complications of up to 20% of patients. So, despite the concept that the elderly should not be denied bariatric surgery solely on age grounds, each individual should be carefully evaluated before surgery in order to asses risk and, in some cases, the procedure must not be performed.

CONCLUSION

Functional decline is observed in almost half of the morbid obese patients over 60 years old. It is related to increasing BMI (BMI >46,5 kg/m^2) but not related to age (60 to 65 years or over 65 years). Functional decline should be considered a co-morbidity in the elderly obese patients and should be assessed before bariatric surgery, in this population.

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RESUMO – ***Contexto*** **-** A obesidade em idosos está associada ao maior comprometimento da funcionalidade, que ocorre com o envelhecimento e em decorrência de perda de massa e força muscular, além de disfunção articular. Como consequência, há perda progressiva de autonomia, dor crônica, diminuição de qualidade de vida e dependência progressiva. A perda de peso pode trazer benefícios em todos esses aspectos, principalmente quando acompanhada de exercícios físicos. Pacientes idosos com obesidade mórbida podem ser submetidos ao tratamento cirúrgico, levando-se em consideração que a perda de peso maciça, proporcionada pela cirurgia bariátrica, pode agravar a perda de massa muscular e trazer complicações nutricionais que poderão prejudicar a saúde global e a qualidade de vida desses pacientes. A avaliação funcional de pacientes idosos candidatos à cirurgia bariátrica e, em que medida a cirurgia pode trazer benefícios ao paciente no campo da funcionalidade ainda precisam ser determinadas**.** ***Objetivo*** **-** O objetivo deste estudo foi avaliar o perfil de funcionalidade de pacientes idosos em um programa de cirurgia bariátrica. ***Método*** **-** Trata-se de um estudo transversal que avaliou por meio de entrevista, exame físico, exames laboratoriais e revisão de prontuários pacientes com obesidade graus II e III, candidatos à cirurgia bariátrica, com 60 anos ou mais. A análise incluiu peso, IMC, presença de comorbidades mais comuns, utilização de medicações para doenças crônicas e testes funcionais. Para os últimos foram utilizados questionários de avaliação de atividades diárias, atividades diárias instrumentalizadas e o teste "Timeupandgo" que avalia mobilidade, cujo tempo de corte é de até 10 segundos. ***Resultados*** **-** Quarenta pacientes completaram a avaliação. A idade média foi de 64,1 anos (60-72) e 75% dos pacientes eram do sexo feminino. O peso médio foi de 121,1 kg (72.7-204) e o IMC médio de 47.2 kg/m^2 (35,8-68,9). Dezesseis (40%) pacientes apresentaram dependência para avaliação de atividades diárias, 19 (47,5%) para atividades diárias instrumentalizadas e 20 (50%) pacientes tiveram um "Timedupandgo" test acima de 10 segundos. A análise estatística (t-Student, Mann-Whitney, Regressão logística) mostraram correlação positiva entre dependência em avaliação de atividades diárias e IMC >49 kg/m^2, dependência em atividades diárias instrumentalizadas e IMC >46,5 kg/m^2, e "Timedupandgo" test acima de 10 segundos e IMC >51 kg/m^2 (P<0,05). Nenhuma diferença em dependência foi observada para pacientes entre 60 e 65 anos ou acima de 65 anos. ***Conclusões*** **-** O declínio funcional foi observado em praticamente metade dos pacientes com obesidade grave acima dos 60 anos. Está relacionado com o aumento progressivo do IMC (IMC >46,5 kg/m^2) mas não com a idade (60 à 65 anos ou acima de 65 anos). O declínio funcional deve ser considerado uma comorbidade do idoso obeso e deve ser avaliado para a indicação de cirurgia bariátrica, nesta população.

DESCRITORES - Obesidade mórbida, cirurgia. Cirurgia bariátrica. Saúde do idoso.

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