

Original Paper

Obesity-Related Comorbidities: One Actress, Multiple Scenes

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REZUMAT

Comorbiditățile asociate obezității: o singură actriță, numeroase scene

Obiectivul studiului a fost de a determina frecvența obezității la pacienții internați într-o secție de medicină internă, ca și principalele comorbidități asociate.

Metodă: Am efectuat un studiu retrospectiv în Clinica de Medicină Internă a Spitalului Clinic de Urgență București, pe pacienții obezi internați în perioada 01.01.2015-01.04.2015. Au fost analizate datele din baza electronică de date a spitalului. La acești pacienți au fost evaluate comorbiditățile asociate cu obezitatea.

Concluzii: În perioada de 3 luni de zile numărul total de internări în Clinica de Medicină Internă a fost de 1032. Dintre acești pacienți, 129 au fost obezi (12.5%) și au reprezentat grupul nostru de studiu. Vârsta medie a pacienților din grupul de studiu a fost de $63,73 \pm 10,29$ ani. Distribuția în funcție de sex a pacienților în grupul de studiu a fost: 75 femei și 54 bărbați. 18,6% dintre pacienți au prezentat obezitate morbidă. Distribuția comorbidităților în grupul de studiu a fost: hipertensiune arterială 82,94%, dislipidemie 61,24%, insuficiență cardiacă 36,43%, diabet zaharat 34,88%, boală cardiacă ischemică 31,78%, boală artrozică 31,78%, steatoză hepatică 25,58%, fibrilație atrială 21,7%, boală arterială periferică 12,45%, bronhopneumopatie cronică obstructivă 13,17%, sindrom de apnee în somn 13,95%, tromboză venoasă profundă 4,65%. 17,82% dintre pacienți au asociat o tulburare depresivă.

Cuvinte-cheie: obezitate, comorbidități, hipertensiune, dislipidemie

ABSTRACT

The objective of the study was to determine the frequency of obesity in patients hospitalized in an internal medicine clinic, as well as the main comorbidities.

Materials and methods: We conducted a retrospective study in the Internal Medicine Clinic of the Clinical Emergency Hospital of Bucharest, on obese patients hospitalized in the clinic between 01.01.2015-01.04.2015. We analyzed data from the hospital record database. In these patients, the comorbidities associated with obesity were evaluated.

Conclusions: During the 3 months period, the total number of admissions in the Internal Medicine Clinic was 1032. From these, 129 patients were obese (12.5%) and represented the group of study. The mean age of the patients in the group of study was 63.73 ± 10.29 years. The distribution by sex in the group of study was: 75 women and 54 men. 18.6 % of the patients had morbid obesity. The distribution of comorbidities in the group of study was: arterial hypertension 82.94%,

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dyslipidemia 61.24%, heart failure 36.43%, diabetes 34.88%, ischemic heart disease 31.78%, arthrosis 31.78%, hepatic steatosis 25.58%, atrial fibrillation 21.7%, peripheral artery disease 12.45%, chronic obstructive pulmonary disease 13.17%, sleep apnea syndrome 13.95%, deep vein thrombosis 4.65%. 17.82% of the patients had depressive disorder.

Key words: obesity, comorbidities, hypertension, dyslipidemia

INTRODUCTION

Obesity is a chronic disease, with increasing incidence and prevalence in Europe and United States, not only in adults, but in children and adolescents too. Worldwide, mean BMI is increasing, 36.9% of men and 38% of women being estimated as having a BMI ≥ 25 Kg/m² (1,2).

In 1997, the World Health Organization declared obesity as a major public health problem and a global epidemic. Obesity is defined as a body mass index (BMI) ≥ 30 Kg/m². Excess weight significantly increases the risk of developing cardiovascular diseases, diabetes, cancer, sleep apnea, and others. Obesity is a major contributor to the global burden of chronic diseases, having important social and psychological implications. Health care costs are significantly higher for obese patients (3). Obese patients develop a great number of associated diseases that require frequent hospitalizations, which pose a burden on the healthcare systems.

The objective of the study was to determine the frequency of obesity in patients hospitalized in an internal medicine clinic of an emergency hospital, as well as the main comorbidities of obese patients.

MATERIAL AND METHOD

We conducted a retrospective study in the Internal Medicine Clinic of the Clinical Emergency Hospital of Bucharest, on obese patients hospitalized in the clinic between 01.01.2015-01.04.2015 (3 months). We analyzed data from the hospital electronic record database, using the search term "obesity". We obtained a database of obese patients, that we used to analyze the comorbidities associated with obesity.

RESULTS

During the 3 months period, the total number of admissions in the Internal Medicine Clinic was 1032 patients. From these, 129 patients were obese (12.5%) and represented the group of study (Fig. 1). The mean age of the patients in the group of study was 63.73 ± 10.29 years. The distribution by sex in the group of study was: 75 women (58.14%) and 54 men (41.86%) (Fig. 2). 18.6% of the patients had morbid obesity (defined as a BMI ≥ 40 Kg/m²) (Fig. 3).

The distribution of comorbidities in the group of study was: arterial hypertension 82.94%, dyslipidemia 61.24%, heart failure 36.43%, diabetes 34.88%, ischemic heart disease 31.78%, arthrosis 31.78%, hepatic steatosis 25.58%, atrial fibrillation 21.7%, peripheral artery disease 12.45%, chronic obstructive pulmonary disease 13.17%, sleep apnea syndrome 13.95% and deep vein thrombosis 4.65% of the patients. 17.82% of the patients had depressive disorder (Fig. 4).

We analyzed the rate of in-hospital mortality in obese versus non-obese patients. The rate of in-hospital mortality was higher in obese patients as compared to non-obese ones. (11.62% versus 8.43%).

DISCUSSION

Our study has found that obese hospitalized patients had a higher mortality rate than non-obese ones. The Prospective Studies Collaboration Analysis of 57 prospective studies, that included 894,000 European and North American adults followed for a mean period of 8 years, concluded that in the upper BMI range (25-50 Kg/m²), for each 5 Kg/m² increase in BMI there was a significant

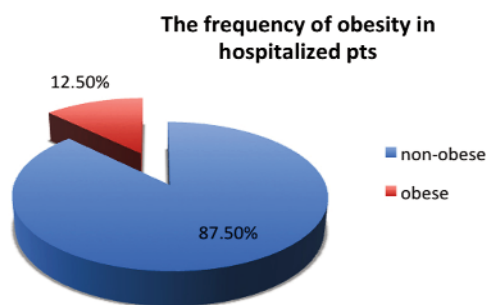


Figure 1. The frequency of obesity in hospitalized patients

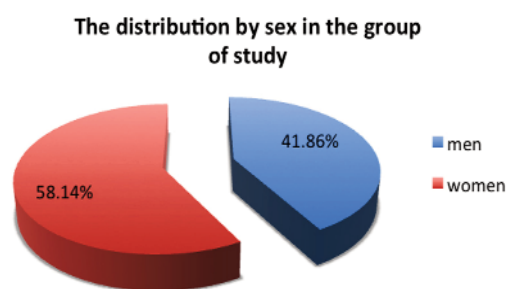


Figure 2. The distribution by sex in the group of study

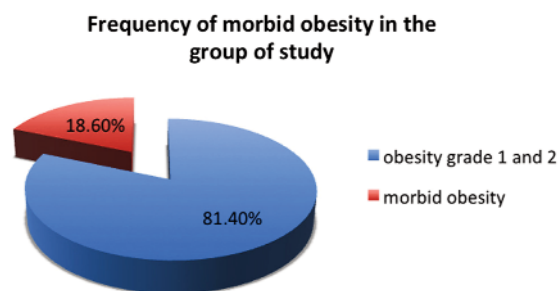


Figure 3. Frequency of morbid obesity in the group of study

increase in the rate of mortality from ischemic heart disease, stroke, diabetes, chronic kidney disease, cancer and respiratory diseases (4). Overall, moderate obesity (BMI 30-35 Kg/m²) was found to reduce life expectancy by an average of 3 years, while morbid obesity (BMI 40-50 Kg/m²) reduced life expectancy by 8-10 years (4); this was the largest ever investigation of how obesity affects mortality. A systematic review and meta-analysis of reported hazard ratios of all-cause mortality for obesity relative to normal weight in the general population identified that grades 2 and 3 obesity were associated with significantly higher all-cause mortality (5). Grade 1 obesity overall was not associated with higher mortality, and overweight was associated with significantly lower all-cause mortality (5). In a pooled analysis of 20 prospective studies from the United States, Sweden and Australia, among 9564 extremely obese participants, mortality rates (deaths per 100,000 per year) were 856.0 in men and 663.0 in women during the study period (1976-2009) (6).

In addition to mortality, obesity is associated with increased morbidity. In our study, arterial hypertension and dyslipidemia were the main comorbidities associated with obesity. Almost 83% of our obese patients were hypertensive, a percentage higher than those reported in

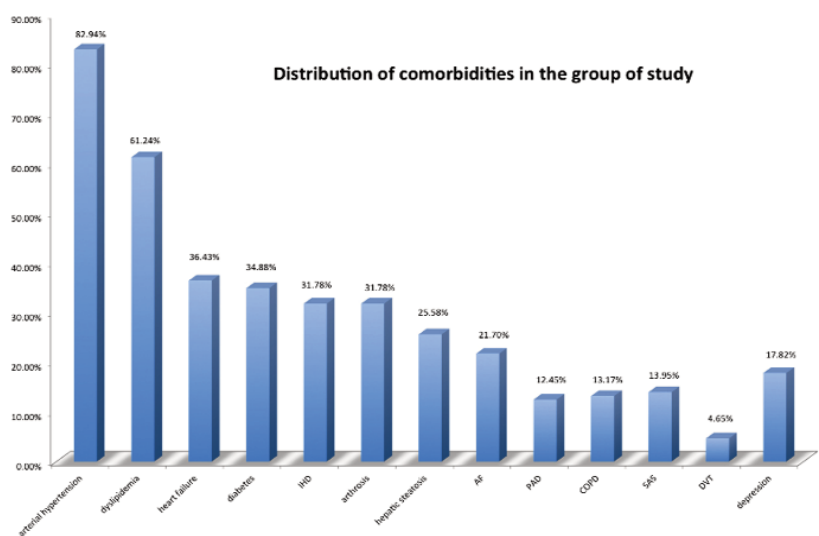
other studies. In a population-based cohort study published in 2015, of 46 149 obese patients, in England, the age-standardised hypertension prevalence was twice as high in morbid obesity (men 78.6%, women 66.0%) compared with normal weight (men 37.3%, women 29.4%) (7). The prevalence of hypertension and hypercholesterolemia rose with increasing BMI range (7).

Over one third of the patients in our study had chronic heart failure, not surprisingly, having in mind the known adverse effects of obesity on left ventricular structure, diastolic and systolic function, and other risk factors for heart failure (arterial hypertension, ischemic heart disease, dyslipidemia etc). The increased risk of heart failure is not limited to individuals with extreme obesity (8). This risk is evident in both sexes (8). Approximately 11% of cases of heart failure among men and 14% among women in the community are attributable to obesity alone (8). Some studies have reported that a low BMI is associated with increased mortality among patients with heart failure (9). Numerous studies have documented an obesity paradox, in which overweight and obese patients, defined by BMI, percentage of body fat or central obesity, demonstrate a better prognosis compared with lean or underweight heart failure patients (10).

61.24% of the patients from our study were dyslipidemic. The hallmark of dyslipidemia in obesity is elevated fasting and postprandial triglycerides in combination with the preponderance of small dense LDL and low HDL-cholesterol (11). Hypertriglyceridemia may be the major cause of the other lipid abnormalities since it will lead to delayed clearance of the triglycerid-rich lipoproteins and formation of small dense LDL (11). Dyslipidemia is a major risk factor for atherosclerosis and coronary heart disease, a life-threatening disease in obese individuals.

Hepatic steatosis was another important comorbidity in our obese patients. In a study of patients with morbid obesity, moderate to severe hepatic steatosis was seen in

Figure 4. Distribution of comorbidities in the group of study



65% of the cases (12). In our study, the frequency of hepatic steatosis was lower (25.58%) than that reported in other studies, but still significant.

Obesity is a major risk factor for developing sleep apnea syndrome. It is estimated that 60-80% of patients with obstructive sleep apnea are obese (13). Studies have shown a high prevalence of obstructive sleep apnea in pre-operative bariatric surgery varying from 58.3% to 100%, but only 15% to 19% were diagnosed previously (14-16). In our study, almost 14% of obese patients had sleep apnea syndrome but the real percentage might be much higher than this, because polysomnography was done only in a minority of the patients.

Patients with obesity have an increased risk for anxiety and depression. Since depression is associated with poor treatment compliance, higher utilization of health services and worse health outcomes, the relationship between obesity and depression is important to clinicians (17). In a study, obese persons had an approximately 1.5-fold higher prevalence of past-month depression than their normal-weight counterparts (18). Therefore, screening for depression and anxiety is very important in obese patients.

There is a strong association of obesity and type 2 diabetes, in both genders. In our study, 34.88% of the patients had type 2 diabetes. Data from the Nurses' Health Study showed an age-adjusted relative risk of 40 for diabetes in women with a BMI ≥ 31 Kg/m², compared with women with a BMI < 22 Kg/m² (19). A similar risk was shown for men in the Health Professionals Follow-up Study: a BMI of ≥ 35 Kg/m² was associated with an age-adjusted relative risk for diabetes of 60.9, compared with a BMI of < 23 Kg/m² (20).

Limitations of the study

Our study has some limitations, mainly due to its retrospective nature. The real frequency of sleep apnea syndrome and peripheral artery disease might be higher in obese patients, because polysomnography, ankle-brachial index or arterial Doppler ultrasonography were not performed in all patients.

CONCLUSIONS

Obesity is linked to a great number of medical comorbidities and is associated with higher mortality rates in hospitalized patients. Arterial hypertension, dyslipidemia, chronic heart failure, ischemic heart disease, atrial fibrillation, diabetes, sleep apnea syndrome, arthrosis, hepatic steatosis, depressive disorder, peripheral artery disease all occur with high frequency in obese patients and lead to increased duration of hospitalization and increased costs for the healthcare system.

No financial support for this work

Acknowledgements

Prof. Dr. Daniela Bartos, University of Medicine and Pharmacy "Carol Davila", Clinical Emergency Hospital of Bucharest, Romania.

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