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Original article

Prevalence of obesity in asthma and its relations with asthma severity and control☆

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ABSTRACT

Objective: To determine the prevalence of obesity in asthmatic patients attending at an outpatient clinic, and to investigate its relationships with asthma severity and level of asthma control.

Methods: In a cross-sectional study we recruited patients aged 11 years and older with confirmed asthma diagnosis from the outpatient asthma clinic of Hospital de Clínicas de Porto Alegre, Brazil. They underwent an evaluation by a general questionnaire, an asthma control questionnaire and by pulmonary function tests. Nutritional status was classified by body mass index (BMI).

Results: 272 patients were included in the study. Mean age was 51.1 ± 16.5 years and there were 206 (74.9%) female patients. Mean BMI was 27.5 ± 5.3 kg/m^2, and 96 (35.3%) patients were classified as normal weight, 97 (35.7%) as overweight and 79 (29%) as obesity. There was a significant higher proportion of female than male patients (34.3% vs. 13.2%, p = 0.002) in the obesity group. There were no significant differences with respect to asthma control (p = 0.741) and severity classification (p = 0.506). The FEV_1% predicted was significantly higher in the obese than in the non-obese group (73.7% vs. 67.2%, p = 0.037). Logistic regression analysis identified sex (OR = 3.84, p = 0.002) as an independent factor associated with obesity.

Conclusions: This study showed a high prevalence of obesity in asthmatic patients. Obese and non-obese subjects were similar in regard to asthma severity and level of asthma control. Female sex was associated with obesity in this asthma population.

Prevalência de obesidade na asma e suas relações com gravidade e controle da asma

Palavras-chave:
Obesidade

RESUMO

Objetivo: Determinar a prevalência de obesidade em pacientes asmáticos atendidos no ambulatório clínico, e investigar sua relação com a gravidade e controle da asma.

☆ Study conducted at Universidade Federal do Rio Grande do Sul, Porto Alegre, RS, Brazil.

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Função pulmonar
Grau de controle
Gravidade da doença
Índice de massa corporal

Métodos: Estudo transversal, envolvendo pacientes, com idade igual ou superior a 11 anos e diagnóstico de asma confirmado, do ambulatório clínico do Hospital de Clínicas de Porto Alegre, Brasil. Os pacientes foram submetidos à avaliação através de um questionário geral, questionário de controle da asma e teste de função pulmonar. O estado nutricional foi classificado conforme o índice de massa corporal (IMC).

Resultados: Foram incluídos no estudo 272 pacientes, sendo 206 (74,9%) pacientes do sexo feminino. A média de idade foi 51.1 ± 16.5 anos. O IMC médio foi 27.5 ± 5.3 kg/m^2, sendo 96 (35.3%) pacientes classificados como eutróficos, 97 (35,7%) como sobrepeso e 79 (29%) como obesidade. Observou-se significativamente maior proporção de pacientes do sexo feminino no grupo de obesidade quando comparados aos pacientes do sexo masculino (34.3% vs. 13.2%, p = 0.002). Não houve diferença significativa em relação ao controle da asma (p = 0.741) e classificação de gravidade (p = 0.506). O FEV_1% predito foi significativamente maior nos pacientes obesos quando comparados aos não obesos (73.7% vs. 67.2%, p = 0.037). A análise de regressão logística identificou gênero como fator independente associado com a obesidade. (OR = 3.84, p = 0.002).

Conclusão: O presente estudo observou alta prevalência de obesidade em pacientes asmáticos. Indivíduos obesos e não obesos tiveram similaridade para gravidade e controle da asma. O gênero feminino foi associado com obesidade nesta população asmática.

Introduction

The prevalence of asthma has been increasing in recent years throughout the world.[1] In Brazil, it is estimated that asthma affects more than 16 million people, approximately 10% of the population.[2,3] It is observed an alarming concomitant increase in obesity, which prevalence reaches epidemic proportions.[4] Survey data (POF 2008/2009) showed that being overweight affects 50.1% of men and 48% of adult women, and of that group, 12.4% of men and 16.9% of women are obese.[5] In Brazil, these two diseases have become a serious public health problem, thus increasing costs from the public and private sectors.[4]

An increasing body of literature suggests that there is an association between obesity and asthma.[6–9] Although the exact nature of this association remains unclear, many investigators have interpreted the data suggesting that obesity both increases the risk of incident asthma and alters prevalent asthma toward a more difficult-to-control phenotype.[10]

A variety of reported observations suggest that obesity might impact the lung in multiple ways.[11–15] Moreover, studies report that individuals with persistent asthma are significantly limited in the practice of physical activity, thus reducing energy expenditure, a fact that contributes to the growing increase in the prevalence of overweight and obesity.[14,16] Likewise, obesity seems to have negative impact on the level of asthma control.[17–19]. Lessard et al. showed that obese individuals are more likely to have not controlled asthma when compared to non-obese.[20] A previous study, however, did not find a relationship between asthma severity and obesity.[21]

The objective of this study was to determine the prevalence of obesity in asthmatic patients attending at an outpatient clinic in a large tertiary care hospital in Southern Brazil, and to investigate its relationships with asthma severity and level of asthma control.

Methods

This is a secondary analysis of a larger study conducted to determine the factors associated with asthma control. It was a cross-sectional study with prospectively collected data. All patients who volunteered were sequentially included. The protocol was approved by the Ethics Committee of Hospital de Clínicas de Porto Alegre (HCPA) and all participants or their parents – in case of patients younger than 18 years – gave written informed consent.

The patients selected were referred from a public institution. All patients were recruited from the outpatient Asthma Clinic of HCPA, Porto Alegre, RS, Brazil. The study included patients above 11 years of age, with a physician's diagnosis of asthma. The diagnosis was confirmed following three criteria: symptoms of asthma, reversible airflow obstruction with improvement of 12% or more and 200 mL in forced expiratory volume in one second (FEV_1) after administration of a short-acting β_2-agonist, or bronchial hyperresponsiveness to a bronchoconstricting agent. Patients who refused to participate, as well as those who did not complete all the evaluations required by the study protocol and patients with chronic pulmonary diseases other than asthma such as emphysema, chronic bronchitis or bronchiectasis were excluded.

After a scheduled outpatient consultation with an asthma specialist, all subjects were interviewed by a researcher using a structured questionnaire that evaluated the influence of the following variables: age, gender, race, marital status, educational level, socioeconomic status, smoking status, comorbid conditions, asthma severity and asthma control. All subjects underwent a comprehensive clinical, nutritional and pulmonary function evaluation.

According to World Health Organization (WHO) criteria,[22] nutritional status was classified by body mass index (BMI), which was calculated as weight in kilograms divided by the square of height in meters (kg/m^2). In accordance with