ASSOCIATION OF THYROID-STIMULATING HORMONE LEVELS AND BODY MASS INDEX IN OVERWEIGHT HISPANICS IN PUERTO RICO

Introduction: Obesity is a serious public health problem, and the increasing prevalence of overweight status in the population is a major concern worldwide. Fifty-eight percent of the Hispanic population of Puerto Rico is obese, but no data are available regarding thyroid status and body mass index (BMI) in this Hispanic group. This study was conducted to investigate if a relationship existed between obesity and thyroid function, as measured by thyroid-stimulating hormone (TSH) levels on a group of Hispanics enrolled in a weight control clinic in Puerto Rico.

Methods: We conducted a retrospective analysis of 637 clinical files of patients enrolled at Doctors Weight Loss Center. Five hundred seventy-five patients were eligible for this study. Inclusion criteria were adults ≥21 years of age with data for age, sex, height, weight, percentage fat, and TSH values.

Results: Prevalence of subclinical or mild hypothyroidism (TSH >4.1 mU/L), as per American Thyroid Association definitions, was 8.2% in our study group, which is higher than reported in the National Health and Nutrition Examination Survey (NHANES). Another 18.2% were in the at-risk category (TSH 2.51–4.0 mU/L). 30.5% are obese, according to data from the 1999–2000 National Health and Nutrition Examination Survey (NHANES III) and the American Heart Association. In Puerto Rico, according to statistics of Puerto Rico’s health department published in May 2002, 58% of the citizens (2,208,994) are obese, the highest rate in a US territory.

Researchers have studied the prevalence of hypothyroidism in obese patients. In a sample of patients who suffered from sleep disordered breathing and were either obese or overweight, the prevalence of hypothyroidism was higher than was commonly reported for these patients. In obese patients, evaluation of thyroid-stimulating hormone (TSH) levels may be useful to rule out possible impairment of resting energy expenditure due to reduced peripheral effect of thyroid hormones.

An anecdotal and popular belief in Puerto Rico, among the overweight and obese, is that their weight gain is due to an underactive thyroid. However, to the best of our knowledge, no studies have examined whether a relationship exists between thyroid status and weight in this Hispanic population. The purpose of the present study was to investigate a possible association between TSH levels and overweight, characterized by body mass index (BMI), in Puerto Ricans.

Conclusion: We found no association between thyroid status and overweight or obesity in this study group but found a higher prevalence of subclinical hypothyroidism compared to the prevalence reported in NHANES.

Key Words: Hypothyroidism, TSH, BMI, Hispanic

INTRODUCTION

Nearly two thirds of adults in the United States are overweight, and 30.5% are obese, according to data from the 1999–2000 National Health and Nutrition Examination Survey (NHANES). Another 18.2% were in the at-risk category (TSH 2.51–4.0 mU/L).

Results: Prevalence of subclinical or mild hypothyroidism (TSH >4.1 mU/L), as per American Thyroid Association definitions, was 8.2% in our study group, which is higher than reported in the National Health and Nutrition Examination Survey (NHANES). Another 18.2% were in the at-risk category (TSH 2.51–4.0 mU/L).

Conclusion: We found no association between thyroid status and overweight or obesity in this study group but found a higher prevalence of subclinical hypothyroidism compared to the prevalence reported in NHANES. (Ethn Dis. 2008;18(Suppl 2):S2-151–S2-154)

Key Words: Hypothyroidism, TSH, BMI, Hispanic

METHODS

Ethics
This study was presented to and approved by the institutional review board of the Medical Sciences Campus of the University of Puerto Rico. In addition, it was approved by Doctors Weight Loss Center clinic directors.

Data Collection
Our sample consisted of all patients enrolled at Doctors Weight Loss Center from January 1 through June 30, 2005. We included adults ≥21 years of age who had data for age, sex, height, weight, percentage fat, and TSH values. Of 637 records analyzed, 62 did not meet the inclusion criteria because they were <21 years of age. The final sample consisted of 575 patients.

Data Extraction
For each participant, we recorded TSH values, weight, height, age, percentage fat, and sex. BMI was calculated as weight in kilograms divided by height in meters squared, and patients were classified as underweight (<18.5 kg/m²), normal weight (18.5–24.9 kg/m²), overweight (25.0–29.9 kg/m²), or obese (≥30.0 kg/m²). Fat percentage was measured by Doctors Weight Loss Center personnel using a BIA 310e Bioimpedance Analyzer (Biodynamics Corporation, Seattle, Wash).

Patient thyroid status was classified according to American Thyroid Association (ATA) guidelines as hyperthyroidism (<0.9–39 mU/L), normal function (0.4–2.5 mU/L), at risk of hypothyroidism (2.51–4.0 mU/L), subclinical or mild hypothyroidism (4.1–9.9 mU/L), or hypothyroidism (≥10.0 mU/L).

Statistical Analysis
Normal distribution was evaluated by determination of skewness and kurtosis, and all variables were considered normally distributed. Prevalence of hypothyroidism was calculated by using

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