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Obesity Associated with Chronic Renal Disease in Patients attended in Clínica de la Costa. Barranquilla, Colombia. 2005-2014

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Abstract

Introduction: Obesity is a risk factor for the development and the progression of the Chronic Kidney Disease (CKD). In Latin America there are few studies where the stages of CKD and the degrees of obesity are related.

Objective: The objective of the study is to evaluate the association of obesity with the chronic renal disease in patients seen in the extern consult of the department of Nephrology at the Clinic of the Coast in Barranquilla, Colombia.

Materials and Methods: A descriptive case series study was conducted. The sample consisted of 300 patients collected in NefroRed©. Measurements of central tendency Y and X2were conducted to establish the association between degrees of obesity with CKD stages. Statistical analyseswere performed in R-CRAN. When the test was realized an association between degrees of obesity and the different stages of CKD was found [x2: 48.62; p-value <0.01].

Conclusion: No statistical evidence of association was found between waist circumference and the stages of CKD [x2: 8.82; p-value ≥ 0.05]. There is an association between levels of obesity and the different stages of CKD. No relationship between waist circumference and the stages of CKD was found.

Asociación de obesidad con la Enfermedad Renal Crónica de pacientes atendidos en la Clínica de la Costa. 2005-2014

Resumen

Introducción: La obesidad es un factor de riesgo de desarrollo y progresión de enfermedad renal crónica (ERC). En Latinoamérica existen pocos estudios donde se relacionen los estadios de ERC y grados de obesidad.

Objetivo: El objetivo de estudio es evaluar la asociación de obesidad con la enfermedad renal crónica de pacientes atendidos en la consulta externa del departamento de Nefrología en la Clínica de la Costa en Barranquilla, Colombia.

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Materiales y métodos: Se realizó un estudio observacional descriptivo tipo serie de casos. La muestra estuvo compuesta por 300 pacientes acopiados en NefroRed©. Se realizaron medidas de tendencia central y un χ^2 para establecer la asociación entre los grados de obesidad con los estadios de la ERC. Los análisis estadísticos se realizaron en R-CRAN. Al realizar la prueba, se encontró una asociación entre los grados de obesidad y los diferentes estadios de la ERC [χ^2: 48,62; p-valor < 0,01].
Conclusión: No se encontró evidencia estadística de asociación entre el Perímetro Abdominal y los estadios de ERC [χ^2: 8,82; p-valor ≥ 0,05]. Existe asociación entre los grados de obesidad y los diferentes estadios de la ERC. No se encontró la relación entre perímetro abdominal y los estadios de ERC.
Palabras clave: Enfermedad renal crónica, Obesidad, Salud Pública, Riñones (fuente DeCS).

Introduction

Obesity is considered a risk factor for development and progression of chronic kidney disease (CKD)[1]. In Latin America there are few studies where stages of CKD and degrees of obesity[2, 3]. In Colombia, the number of dialysis patients has grown exponentially: In1992, the number of dialysis patients was about 2000 and by the end of 2015, this number exceeded 25 000 patients. Diabetes and hypertension account for 70% of the causes of chronic kidney disease in the country, with great risk of progression and need for dialysis or trasplant[4 5].

To date, it is thought that 2.6 million people in the world are overweight and over 300 million are obese. By 2030, a total of 1.12 million people with obesity[6] is expected. In Latin America, according to figures obtained from the NHANES III (National Health and Nutrition Examination Survey III), 20% of men and 25% of adult women were obese in the nineties, increasing its prevalence to older ages (60-69 years) 07.09 is estimated.

In Colombia, facts from the Colombian Institute of Family Welfare, collected in the National Survey of the Nutritional Situation in Colombia in 2005, shows an average excess weight in adults of 46% (in men of 39.9% and women 49.6%). Both being overweight and obese are more prevalent in women than in men (33% versus 8.8%, in obesity). In adolescents aged 10 to 17 years 10% are overweight, with a higher prevalence in urban areas than in rural areas (11.6% vs. 7.2%), and is more common in girls than in boys (12% vs 8.1%). Overall, according to National Health Survey in 2007, 32.21% in Colombia are overweight and 13.71% have obesity[10].

In the U.S adult population, 1 in every 3 individuals are overweight (BMI 25-29.9 kg / M2), 1 in every3 are obese (BMI> = 30 kg / M2) and approximately 1 in every 20 has morbid obesity (BMI> 40 kg / M2). Consequently, 1 in3 adults has an ideal BMI (between 18.5 and 24.9 Kg / M2) [11, 12].

It is estimated that 24% of the causes of chronic kidney disease (CKD), in industrialized countries, is attributed to obesity. However, a majority of the incidences of diabetes and hypertension remain related to excessive caloric intake, combined with low physical activity. Consequently, it is logical to think that the obesity epidemic in the US is contributed with the simultaneous and rapid increase in end-stage renal disease (ESRD, its acronym in English) in the last 25 years and most of ESRD in this country comes directly or indirectly from obesity[13].

Public health efforts to tackle the obesity epidemic have had an extremely slow response. Even today, the vast majority of doctors are not addressing obesity with their patients, neither are they providing nutrition and weight management advice for the management of chronic diseases, including chronic kidney disease. Within the medical practice of Nephrology, the management of obesity in patients with renal disease seems not to be taken seriously. Between 399 nephrologists, 57% from Europe, 12% of Central America and 12% in South America, only 65% said that obesity is a risk factor for CKD, and only 32% said they prescribed a calorie restricted diet and motivated patients to increase their physical activity to manage the presence of obesity and moderate CKD. Similarly, the calorie restriction is not widely used, or specific aspects of

nutritional management that can stop the development and progression of kidney disease, obesity wise[14].

Materials and Methods

A descriptive case series study was performed because it allows the description of the similar characteristics that patients from the nephrology department share, such as the CKD, and facilitate the exploration of possible associations. The total number of patients who were systematized in theNefro-Red©database, of the Department of Nephrology from the Clinic of the COAS with CKD were 1,536, of which 300 had all the data required to be included in the study. Inclusion criteria: patients diagnosed with CKD stages 1 to 5 and over 18 years old. Exclusion criteria: having incomplete information in the database.

Results and Analysis

The percentage of men affected was 57% and women 43%. The average age of men was 66 ± 15 years and for women was 65 ± 13.35% of patients with CKD have a nutritional diagnosis, according to BMI, of overweight or obesity.

The expected relationship between waist circumference and levels of obesity was found [x2: 130.279; p-value <0.05]. When testing independence between CKD stages and degrees of obesity, an association was found between them [x2: 48.62; p-value <0.01]. No statistical evidence of association between waist circumference and the stages of CKD [x2: 8.82; p-value ≥0,05] (see Figure 1).

Discussion

Obesity, especially morbid obesity, seems to be a strong risk factor for the future development of severe CKD, when present during adulthood. Between 1964 and 1985, 320,252 adults aged between 18 and 34 were volunteers for screening evaluations in a large health system. Participants were followed for 15 to 34 years, and once they were between the ages of33 and 68 years old; morbid obesity was associated with a 6 times higher risk for developing severe CKD compared to individuals with an ideal BMI. Among adults with a CKD base, morbid obesity was associated with a risk 3 times higher of developing severe CKD compared to individuals with ideal BMI and an ERC base. Similar associations were noted between overweight and obesity during adolescence, and the risk of severe CKD during middle-age[7]. Studies involving older adults with shorter follow-ups found weaker associations between obesity and the risk of severe CKD8-10, suggesting that the association between obesity and the risk of CKD is limited to individuals with metabolic syndrome and/or hypertension.

The measures of abdominal obesity, such as waist circumference and waist/hip ratio, are more consistently associated with the risk of CKD, compared with BMI11-13. BMI reflects muscle mass, abdominal and peripheral fat, while measures of abdominal adiposity reflect visceral fat, a strong risk factor for the development of resistance to insulin15-18. However, regardless of the method of measurement, the presence of obesity among adults older than 60 years increased modestly, the risk of CKD and the associations are mainly caused by the confusing effects of hypertension and diabetes. Contrasting with this, morbid obesity during adolescence and adulthood condition a prolonged exposure to obesity-related comorbidities that increase the risk of CKD (metabolic syndrome, diabetes, hypertension).

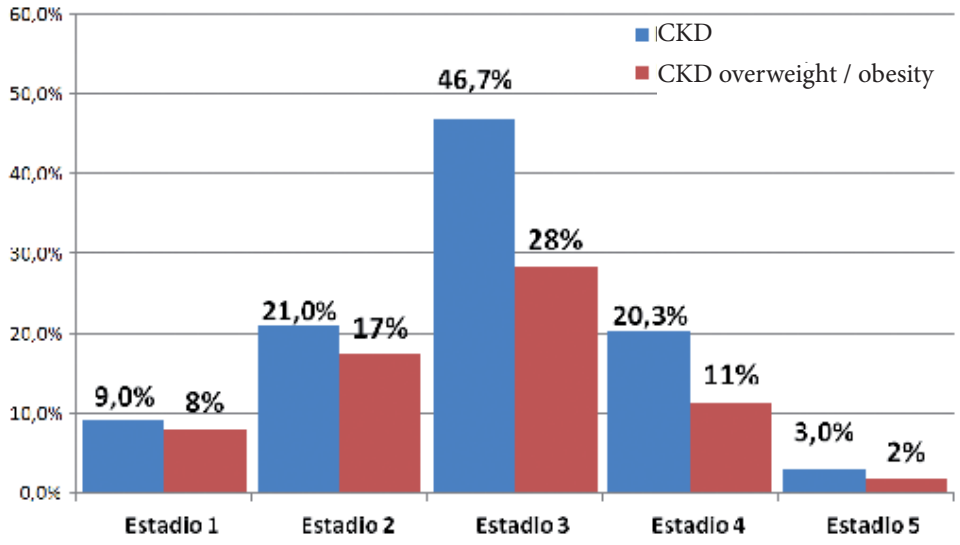
This prolonged effect of obesity, along with other independent factors, act on different functional renal parameters that determine the development and progression of kidney disease in obese individuals[15, 19].

In our work it stands out that 35% of patients with different stages of CKD have a nutritional diagnosis, according to BMI, of overweight or obesity. An association between the degrees of obesity and the different stages of CKD was also found, but the relationship between waist circumference and the stages of CKD was not found.

Consequently, public health efforts aimed at stopping theCKD epidemic should include programs for prevention and treatment of obesity, choosing as its

Figure 1

Comparison of CKD patients with different grades of overweight and/or obesity.



main target teens and young adults. Such programs not only help slow the incidence of CKD, but also to reduce the incidence of cardiovascular disease and increase life expectancy of young adults. Weight loss in adults over the age of 60 can also provide health benefits, but the benefits of Public Health for the total prevention of obesity are much larger for younger individuals, who have several decades of life expectancy above[4, 5 15-17, 19].

Conflict of Interest

All authors state that they do not have any conflict of interest.

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