Prevalence of obesity and diabetes in coronary artery disease

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Abstract

Background-Obesity is a common public health problem reaching epidemic proportions in recent decades. Increased BMI imposes a pro- inflammatory state, releasing factors such as high sensitivity-C reactive protein which is strongly associated with plaque rupture and acute cardiovascular events. Also the prevalence of type 2 diabetes has reached epidemic level.

Materials and methods-A total of 400 consecutive patients recruited in this cross sectional study from April 2009 to December 2009 who was candidate for coronary angiography. Baseline clinical characteristics and coronary angiography data collected. Data analysis performed using 2-sided independent-sample t-tests.

Results-Out of 400 patients recruited in the study 253 were male. Obesity and diabetes observed in 65.7% and 32.5% of these patients respectively. Hypertension was more prevalent in obese patients (p=0.013) while dyslipidemia was not significantly different. The severity of coronary artery lesions were significantly associated with diabetes but not related to obesity (pvalue=0.0001 and 0.316 respectively).

Conclusions-The main finding of this preliminary study was that diabetes is significantly related to severity of coronary artery disease and hypertension and hyperlipidemia is more prevalent in diabetic patients. Moreover, obesity is not significantly related to severity of coronary artery lesions (***Iranian Heart Journal 2011; 12 (3):37-39***).

Obesity is a common public health problem reaching epidemic proportions in recent decades.[1] In the United States, 66% of adults are overweight. Obesity is now classified as an independent modifiable risk factor for the development of coronary artery disease (CAD) and morbidly obese individuals (BMI>40 kg/m2) in particular have a disproportionate incidence of acute coronary events.[2,3] Even in some studies, BMI >40 kg/m2 identified as coronary event risk factor exceeding the impact of smoking and family history.[4] Increased BMI imposes a pro-inflammatory state, releasing factors such as high sensitivity-C reactive protein which is strongly associated with plaque rupture and acute cardiovascular events.[5]

In parallel with rapid nutritional and lifestyle changes, such as an increased energy-dense diet and reduced physical activity, the prevalence of type 2 diabetes has reached epidemic level. The relation between diabetes and coronary lesions identified previously The present study was conducted to describe the prevalence of obesity and diabetes and associated obstructive and nonobstructive coronary artery lesions in patients with possible CAD.

Materials and Methods

A total of 400 consecutive patients recruited in this cross sectional study from April 2009 to December 2009.

Patients were candidate for coronary angiography by cardiologist. Those with an iodinated contrast allergy, markedly irregular heart rhythm, pregnancy and renal insufficiency were excluded from study participation. The study was approved by the Ethics Committee at Rajaei heart center and all patients provided written informed consent.

Baseline clinical characteristics included age, sex, BMI, weight, waist and chest circumference, hypertension, diabetes mellitus, cigarette smoking, hyperlipidemia, use of lipid lowering medications, and a positive family history of cardiovascular disease.

Coronary angiography was performed using Siemens Medical Systems (Forchheim, Germany).

Angiographic views were analyzed by a single experienced reader blinded to other findings.

Lesions were classified by the maximal luminal diameter stenosis according to a qualitative severity scale: mild (1%-25%), moderate (26%-50%) and obstructive (>50%) in the population with CAD. Coronary disease was defined as the presence of any atherosclerotic lesion (>1% stenosis) in one or more coronary artery segments.

Baseline characteristics were expressed as mean ±standard deviation or counts with proportions as appropriate. Statistical analysis was performed using SPSS 12. All data were expressed as mean ± standard deviation for continuous variables and counts with proportions for dichotomous variables. Clinical characteristics were compared using 2-sided independent-sample t-tests to detect statistical significance. P<0.05 were considered significant.

Results

400 patients enrolled in this study. Of this population 253 patients were male and 147 patients were female. Obesity determined according to BMI>25 in 65.7% of this cohort. Diabetes was identified in 32.5% of these patients. Coronary artery lesion was classified into three groups. The distribution of patients in mild, moderate and severe lesion group was 30%, 45.7% and 24.3% respectively. The proportion of men in obesity group was 59.1%. 52.2% of obesity group had Hypertension which was significantly different compare to normal weight patients (p=0.013). Hyperlipidemia was not significantly different among obese and normal weight patients.

Diabetic patients had mean age of 61 which was significantly higher than non diabetic group (p=0.001). Also diabetic group had significant increase in prevalence of hypertension (74.6%) and hyperlipidemia (68.5%) which both p values were 0.0001. The severity of coronary artery lesions were significantly associated with diabetes but not related to obesity (p value=0.0001 and 0.316 respectively)

Discussion

Subclinical atherosclerosis is common in the general population.[6,7] The Framingham study reported atherosclerosis in approximately one third of normal weight individuals; moreover, 40% of overweight participants and up to 50% of obese individuals demonstrated subclinical atherosclerotic disease.[8] Subclinical atherosclerosis has been shown to predict the development of ischemic cardiovascular events.[9] Moreover, excess adiposity is strongly related to acute coronary syndromes occurring prematurely. Our data suggest that there is no significant association between obesity and coronary atherosclerosis. Also diabetes as previously proven to be a major risk factor of coronary artery disease continued to affect our result and prevalence

of hypertension and hyperlipidemia were also increased in diabetic patients.[10]

Conclusions

The main finding of this preliminary study was that diabetes is significantly related to severity of coronary artery disease and hypertension and hyperlipidemia is more prevalent in diabetic patients. Moreover, obesity is not significantly related to severity of coronary artery lesions.

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