

Obesity, Leptin Levels and Leptin Receptor Gene Polymorphisms in Afro-Caribbean Subjects

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Abstract : Leptin, an adipocyte-derived hormone, modulates insulin secretion and action via the leptin receptor (LEPR) that is expressed in pancreatic beta cells, adipose tissue, and muscle. Several polymorphisms have been described in the human LEPR gene including p.K109R (rs1137100), p.Q223R (rs1137101) and p.K656N (rs1805094) polymorphisms. The role of these polymorphisms is not yet studied in Guadeloupian population. Our aim was to explore the association of LEPR polymorphisms (K109R, Q223R and K656N) with leptin levels and obesity in non-diabetic Afro-Caribbean subjects. Genotypic analysis of the three polymorphisms was performed in 425 subjects using TaqMan and KASPar Assays. Serum leptin was measured with ELISA kits Biovendor® (RD191001100). Logistic regressions were used for assessment of statistical associations. Mean age was 47.6 ± 12.7 years. Among the participants, 238 (56 %) were women, 124 (30%) were obese and 155 (36.5%) had abdominal obesity. Carriers of LEPR K656N rs1805094 rare allele had significant higher frequencies of obesity ($P = 0.007$), abdominal obesity ($P = 0.004$) and metabolic syndrome ($P = 0.021$) but mean leptin level was not significantly different between both groups ($P = 0.075$). Odds ratios, adjusted for age and sex associated with presence of rs1805094 rare allele were 1.8 (1.1-2.9), $P = 0.012$ for obesity, 2.0 (1.2-3.3), $P = 0.008$ for abdominal obesity and 1.8 (1.1-3.0), $P = 0.031$ for MetS. No significant association was found with K109R, Q223R. These findings suggest that the K656N polymorphism (but not the K109R or Q223R polymorphism) of LEPR is associated with obesity, abdominal obesity and metabolic syndrome in this Afro-Caribbean non-diabetic population.

Keywords : Afro-Caribbean, leptin levels, leptin receptor gene polymorphisms, obesity

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