

UKPDS 20: plasma leptin, obesity, and plasma insulin in type 2 diabetic subjects.

Widjaja,A; Stratton,IM; Horn,R; Holman,RR; Turner,R; Brabant,G

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We measured plasma leptin and insulin concentrations across a spectrum of obesity in 829 white Caucasian, 154 Afro-Caribbean, and 204 Asian type 2 diabetic subjects. Although the leptin concentrations covered a large range, there were no subgroups of diabetic subjects with very high or low leptin levels that would suggest mutations in the leptin gene or leptin receptor gene comparable to the obese diabetic ob/ob and db/db mice models respectively. In all three ethnic groups, leptin concentrations correlated with body mass index (BMI) in a similar manner to nondiabetic patients and were higher in females than males after adjustment for BMI, with no difference between ethnic groups. In a multivariate regression analysis, plasma leptin was associated with gender and BMI, (both $P < 1 \times 10^{-17}$) and with fasting plasma insulin concentrations ($P = 5 \times 10^{-9}$). Subjects treated with insulin had both raised insulin and leptin concentrations. When matched for different therapies, gender, and BMI, diabetic subjects with high leptin levels also had high insulin levels ($P < 0.0009$). High leptin concentrations may in part be influenced by hyperinsulinemia or impaired insulin sensitivity.