

## **Adverse effect of hyperinsulinemia on cardiovascular risk profile in middle-aged belgian population**

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**Objectives:** assuming that insulin levels are reliable markers of insulin resistance, are increased fasting and/or postload insulinemia good predictors of an adverse cardiovascular risk profile in epidemiological studies?

**Method:** in the MONICA project a random sample of 1631 subjects (35-64 years old) living in the province of Luxemburg, free of antihypertensive drugs and hypoglycemic agents were submitted to an oral glucose tolerance test (OGTT). Blood samples for insulin (ins) and glucose were drawn at 0 and 2 hours, were available: total cholesterol (TC, HDL-cholesterol (HDL-C), triglycerides (TG), blood pressure (BP), BMI. Individuals were classified in 2 groups according to their level of fasting and 2 h insulinemia being either lower (group 1) or higher (group 2) than the 90<sup>th</sup> percentile value of the distribution of insulinemia.

**Results:** Comparisons between groups show that mean BP, BMI, glycemia, TC and TG are higher ( $p < 0.0001$ ) in group 2 while HDL-C is significantly lower. In group 2, hypertension is 2 times more frequent than in group 1. Same observations are made for obesity (4 times more), impaired glucose tolerance, diabetes (10 times), high TG (3 times) and low rate of HDL-C (4 times). Insulin levels correlate significantly with BP and lipids. In group 1, people are generally affected by no more than 1 cv risk factor, whereas cumulation of 2-3 and more risk factors is significantly more frequent in group 2 where 8.4 % of individuals exhibit hypertension with obesity, diabetes and dyslipidemia. Comparisons between the group 1 and other groups characterized by increased either fasting or postload insulin strongly suggest that an isolated increase of fasting insulin is already associated with an adverse cv risk profile.

**Conclusions:** Unquestionably the OGTT with measurement of fasting and 2 hours postload insulinemia allows, in population studies, to identify people with a significant increase of major cardiovascular risk factors when hypersulinemia is diagnosed. Our results indicate that already fasting insulinemia level is a good predictor of our observations.