Insulin Sensitive Obesity (Metabolically Health Obesity)

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The subjects with obesity are widely stereotyped as a metabolic syndrome with insulin resistance, dyslipidemia, hypertension and abnormal glucose tolerance, despite a subgroup of obese individuals may exhibit better insulin sensitivity than expected for their adiposity. Clinically, there are four different metabolic phenotypes: 1. Metabolically healthy normal weight (MHNW), 2.Metabolically obese normal weight (MONW), 3.Metabolically Healthy obese (MHO). 4. Insulin Resistant Obese. The prevalence and characteristics of MHO using different criteria had different results, ranges from 10 to 50 %. The criteria indentifying insulin sensitivity includes the Glucose Clamp and the homeostatic model assessment (HOMA) in general and also uses the metabolic syndrome criteria in particular.

In contrast to obese insulin-resistant subjects, MHO individuals do NOT show increased all-cause, cancer, and CVD mortality risks, when compared with nonobese insulin-sensitive subjects. In one study, independently of total body fat mass, increased visceral fat accumulation and adipose tissue dysfunction are associated with IR obesity. This suggests that mechanisms beyond a positive caloric balance such as inflammation and adipokine release determine the pathological metabolic consequences in patients with obesity. The strongest predictors of insulin sensitivity by far were macrophage infiltration together with circulating adiponectin ($r(2) = 0.98$, $P < 0.0001$).

In general, the MHO individuals had lower dietary intakes, higher aerobic fitness, lower liver fat content, decreased visceral adiposity, smaller adipocytes, greater metabolic flexibility, lower inflammatory cytokines, higher plasma adipokines, lower plasma RBP-4, lower skeletal muscle intramyocellular lipid, respectively.

In conclusion, not all obese subjects are vulnerable to metabolic syndrome and not all normal weight individuals are exempted from insulin resistance, dyslipidemia, hypertension and impaired glucose tolerance. With this in mind, there is a subgroup of obese individuals seems to be protected from insulin resistance.