Metabolic syndrome in obese Caucasian children: prevalence using WHO-derived criteria and association with non traditional cardiovascular risk factors

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Objective: studies on the prevalence of metabolic syndrome (MS) in European obese children using child-based criteria are scanty. Moreover, it is unknown if non traditional cardiovascular disease (CVD) risk factors are associated with the MS at this early age in these subjects.

Design and subjects: we studied the prevalence of the MS in 588 Caucasian obese children and adolescents by devising a World Health Organization derived definition and child-specific criteria, whose deviation from normalcy was based on an age, sex, and ethnically comparable control group of 1363 subjects. In a subgroup of 206 obese children, we investigated the association of the MS with non traditional CVD risk factors.

Measurements: fasting blood samples for glucose and lipids measurements were taken in both control and obese children. In addition, the obese children underwent an oral glucose tolerance test. In the subgroup of 206 obese children, albumin excretion rate , plasma uric acid, fibrinogen, plasminogen activator inhibitor type 1(PAI-1), C-reactive protein, interleukin 6 and white blood cells were also measured.

Results: the prevalence of MS was 23.3%. A similar prevalence of 23% of MS was recorded in the subgroup of 206 obese children in whom measurements of non traditional CVD risk factors were available. After adjustment for the degree of obesity, subjects with MS had significantly higher uric acid (6.6±0.23 *vs* 6.1±0.12 mg/dl, P<0.0001) and PAI-1 plasma concentrations (231.4±25.50 *vs* 214.3±12.96 ng/ml, P<0.05) and a higher frequency of microalbuminuria (37 *vs* 20%, P<0.05) than those without MS. Microalbuminuria, uric acid and PAI-1 explained 10.6% of the variance of MS.

Conclusion: approximately, a quarter of Caucasian obese children have the MS. The association of MS with several non traditional risk factors for CVD early in life suggests a heightened CVD risk in these individuals.