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## THE METABOLIC SYNDROME AND CARDIOVASCULAR DISEASE: LESSONS FROM THE BRUNECK STUDY

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Over the last two decades, many epidemiological data have documented that type 2 diabetes, hypertension and dyslipidaemia cluster in the same individuals. Clinical data have indicated that central obesity and insulin resistance are common denominators in this cluster and probably play a key pathogenetic role. The clinical phenotype of the cluster was defined with different names but Metabolic Syndrome has been the most widely used term in recent years. Clinical criteria for the identification of the Metabolic Syndrome were established by the WHO and NCEP. NCEP criteria are simpler but WHO criteria identify a greater number of subjects.

We have recently evaluated prevalence, further biochemical abnormalities and cardiovascular risk of the Metabolic Syndrome in a large sample from the general population of Bruneck aged 40 to 80 years. We used both WHO and NCEP criteria and found that the Metabolic Syndrome is extremely common, with a prevalence of 34% with WHO criteria and 18% with NCEP criteria. Irrespective of diagnostic criteria, subjects affected showed biochemical abnormalities suggesting a mild chronic inflammation, a pro-thrombotic state, an increased oxidative stress and an endothelial dysfunction. In fact, we observed that subjects with the Metabolic Syndrome had higher ESR and WBC, higher fibrinogen and oxidized LDL, and higher circulating endothelial adhesion molecules (E-selectin, P-selectin, ICAM-1 and VCAM-1). As indicated by several longitudinal studies, these abnormalities represent further risk factors for cardiovascular disease. Therefore, subjects with the Metabolic Syndrome have a complex cluster of several traditional and non-traditional risk factors. Interestingly, most of these non-traditional risk factors were associated to insulin resistance in our study.

The 5-year follow-up of the Bruneck cohort documented that subjects with the Metabolic Syndrome had an increased incidence of carotid atherosclerosis and coronary heart disease. The risk was two- to threefold higher than in individuals without the syndrome. These results are consistent with those reported by other investigators. Therefore, a large proportion of individuals from the general population are at increased cardiovascular risk for the presence of the Metabolic Syndrome. The identification of these subjects seems to be a major goal of preventive medicine in the next future.

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