

NSA

Obesity: Does it Matter?

Metabolic complications of obesity

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The metabolic syndrome (MS) is the major adverse consequence of overweight and obesity. The high rate of conversion to diabetes and the high risk of developing clinical coronary heart disease emphasise the importance of identifying such individuals and treating the syndrome. Although recognised several decades ago, its rapid increased prevalence across the globe has elevated MS into a high priority public health issue. Several definitions have been suggested; each includes visceral obesity, insulin resistance, dyslipidaemia and hypertension as the critical cluster of factors. The actual numbers vary according to the region: lower waist circumferences and BMI in Asia in contrast to the USA, since MS develops at lesser visceral obesity among Asians. Additional important metabolic disturbances in MS include pro-thrombogenic factors, evidence of inflammation and vascular dysfunction. Multiple genes contribute some being over-expressed and others polymorphic; as yet no clear major candidate genes have emerged.

Apart from energy a number of other nutrients and patterns of eating influence MS. Hyperinsulinaemia common in MS, is influenced by the amount and nature of carbohydrate and of fatty acids, possibly by dietary fibre and protein. The metabolic abnormalities in plasma lipids and blood pressure are affected by well-recognised nutrients. Three large intervention trials have recently shown that optimising diet together with weight loss and a modest increase in physical activity substantially delay conversion of MS to Type2 diabetes.

Among the abnormalities in vascular and endothelial function commonly observed in MS increased arterial stiffness of large arteries and impaired vasorelaxation in the microcirculation correlate with waist circumference and impaired glucose tolerance. Our studies have shown benefits with a variety of nutritional interventions. Apart from weight loss, fish oil fatty acids and isoflavones have been found to reduce arterial stiffness in MS. By contrast, a large fat meal or raising the plasma homocysteine concentration, rapidly raises arterial stiffness. Thus appropriate nutritional management and increased physical fitness should reduce the metabolic complications of obesity, since the risks for heart attack and diabetes are a function of the number of metabolic dysfunctions stemming from visceral adiposity.