

Childhood obesity alone may increase risk of later cardiovascular disease

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By as early as 7 years of age, being obese may raise a child's risk of future heart disease and stroke, even in the absence of other cardiovascular risk factors such as high blood pressure, according to a new study accepted for publication in The Endocrine Society's *Journal of Clinical Endocrinology & Metabolism (JCEM)*.

"This new study demonstrates that the unhealthy consequences of excess body fat start very early," said Nelly Mauras, MD, of Nemours Children's Clinic in Jacksonville, Florida and senior author of the study. "Our study shows that obesity alone is linked to certain abnormalities in the blood that can predispose individuals to developing cardiovascular disease early in adulthood.

These findings suggest that we need more aggressive interventions for weight control in obese [children](#), even those who do not have the comorbidities of the metabolic syndrome."

The metabolic syndrome is a cluster of risk factors that raise the risk of developing [heart disease](#), [stroke](#) and diabetes. It is being increasingly diagnosed in children as being overweight becomes a greater problem. Although debate exists as to its exact definition, to receive a diagnosis of metabolic syndrome, one must have at least three of the following characteristics: increased waist circumference (abdominal fat), low HDL ("good") cholesterol, high triglycerides (fats in the blood), [high blood pressure](#) and high blood glucose (blood sugar).

Mauras and her colleagues wanted to know if obesity could raise cardiovascular disease risk prior to the onset of the metabolic syndrome. Researchers therefore screened more than 300 individuals ages 7 to 18 years and included only those without features of the metabolic syndrome. They included 202 participants in the study: 115 obese children and 87 lean children as controls. Half of the children were prepubertal and the other half were in late puberty. Obese children had a body mass index (a measure of body fat) above the 95th percentile for their sex, age and height.

To be eligible to participate in the study, the children and adolescents had to have normal fasting blood sugar levels, normal blood pressure and normal cholesterol and triglycerides. Lean controls also could not have a close relative with type 2 diabetes, high cholesterol, high [blood pressure](#) or obesity. The latter group proved very difficult to find.

All study participants underwent blood testing for known markers for predicting the development of cardiovascular disease. These included elevated levels of C-reactive protein (CRP), a marker of inflammation, and abnormally high fibrinogen, a clotting factor, among others. Obese children had a 10 fold higher CRP and significantly higher fibrinogen concentrations, compared with age- and sex-matched lean children, the authors reported. These abnormalities occurred in [obese children](#) as young as age 7, long before the onset of puberty.

The results were striking Mauras stated, as the children were entirely healthy otherwise. Although it is not yet known whether early therapeutic interventions can reverse high CRP and fibrinogen, she said it would be prudent for health care providers to advise more aggressive interventions to limit calories and increase activity in "healthy" overweight children, even before the onset of puberty.

"Doctors often do not treat obesity in children now unless they have

other features of the metabolic syndrome," Mauras said. "This practice should be reconsidered. Further studies are needed to offer more insight into the effects of therapeutic interventions in these children.

More information: The article, "Obesity Without Established Comorbidities of the Metabolic Syndrome is Associated With a Pro-inflammatory and Pro-thrombotic State Even Before the Onset of Puberty in Children," will appear in the March 2010 issue of JCEM.

Provided by The Endocrine Society

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