News Summary

<u>OR18-4:</u> Childhood obesity increases early signs of cardiovascular disease

By as early as 7 years of age, being obese may raise a child's future risk of heart disease and stroke, even without the presence of other cardiovascular risk factors such as high blood pressure, a new study found. The results will be presented Friday at The Endocrine Society's 91st Annual Meeting in Washington, D.C.

The study, conducted by researchers at Nemours Children's Clinic and Dr. Charles DelGiorno, an Endocrine trainee from the Mayo Clinic of Jacksonville, Fla., demonstrates that the unhealthy consequences of excess body fat start very early, said Principal investigator and senior author Nelly Mauras, MD, Chief of Pediatric Endocrinology at Nemours Children's Clinic in Jacksonville, Florida. Obesity alone, the study shows, is linked to certain abnormalities in the blood that can predispose individuals to developing cardiovascular disease early in adulthood.

"Our study finding suggests that we need more aggressive interventions for weight control in obese children, even those who do not have the co-morbidities of the metabolic syndrome," Mauras said.

The metabolic syndrome is a cluster of risk factors that raise the risk of developing heart disease, stroke and diabetes. It is increasingly being diagnosed in children as overweight becomes a greater problem. Although debate exists as to its exact definition, to receive a diagnosis of metabolic syndrome, in general you must have at least three of the following: 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 colleagues wanted to know if simple obesity could raise cardiovascular disease risk before the metabolic syndrome develops. They therefore screened more than 300 individuals ages 7 to 18 years and included just those without features of the metabolic syndrome. They included 202 subjects in the study: 115 obese children and 87 lean children as controls ~ half were prepubertal and half 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 7-year-olds, 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,” she said. “This practice should be reconsidered. Further studies by the growup will offer further insight into the effects of therapeutic interventions in these children.”

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