

Childhood Obesity Boosts LV Size, CVD Risk

VITALS

Major Findings: Left-ventricular mass in children grew by 4% in the past 2 decades, and body mass index was linked to the increased mass.

Source of Data: Retrospective study of 700 children examined at Cincinnati Children's Hospital during 1986-1988 and 2008.

Disclosures: Dr. Crowley had no financial disclosures for the study.

BY MITCHEL L. ZOLER

ORLANDO — A growing number of American children have increased left ventricular mass, a marker for cardiovascular disease risk.

The finding was noted in a study that included 700 children and “is the first study to look at average left ventricular mass in the whole pediatric population,” according to Dr. David I. Crowley, a pediatric cardiologist at Cincinnati Children's Hospital.

In children with an average age of 10 years, mean left ventricular mass rose by a statistically significant 4% from 1986 to

2008. The prevalence of left ventricular hypertrophy in the children more than doubled, from 7% to 15%, Dr. Crowley said at the annual scientific sessions of the American Heart Association.

The increase appears to be linked to obesity.

In the 1986-1988 cohort of 350 children examined at Cincinnati Children's, the prevalence of overweight was 14% and of obesity was 5%.

In a matched cohort of 350 children assessed in 2008, the prevalence of overweight was 15% but the prevalence of obesity soared to 19%.

Results from a multivariate analysis showed that body mass index was a major determinant of left ventricular mass, Dr. Crowley said.

The study included children aged 2-19 years.

The participants came to Cincinnati Children's in 1986-1988 for an echocardiography examination because of a murmur, palpitations, syncope, or chest pain.

All 350 children included in the analysis had normal cardiac anatomy and function, and none had systemic disease or a body mass index of 40 kg/m² or more.

Dr. Crowley and his associates identified 350 children matched by age and gender who underwent echocardiography at their center during 2008 for similar reasons and met similar clinical criteria.

Both cohorts were 60% boys, and 82% or 83% were white.

Analysis of the echocardiographic data showed that, in addition to having larger hearts, the more recently evaluated chil-

dren also had a greater prevalence of high-risk cardiac morphology.

The prevalence of eccentric hypertrophy was 6% in the 1986-1988 group and 12% in the 2008 cohort.

The prevalence of concentric hypertrophy also doubled in the more recent cohort.

Although average left ventricular mass rose by only 4% from the older to more contemporary cohort, this difference is important, commented Dr. Stephen R. Daniels.

“When you look at a population and a value gets worse by even a small amount, it suggests that many more in the population may now be in a high-risk category,” said Dr. Daniels, a pediatric cardiologist and professor and chairman of pediatrics at the University of Colorado in Denver. ■

In addition to having larger hearts, the more recently evaluated children also had a greater prevalence of high-risk cardiac morphology.

Obesity Puts Adolescents at Risk for Spinal Abnormalities

BY PATRICE WENDLING

CHICAGO — Adolescents who are overweight or obese are at risk for spinal disease not typically seen until adulthood.

A review of low back MRIs on 228 adolescents, aged 12-20 years, revealed that lumbar spine abnormalities are most common in children with a high body mass index (BMI) and back pain, Dr. Judah G. Burns reported at the annual meeting of the Radiological Society of North America.

Among the 188 patients with back pain who met the inclusion criteria, MRI abnormalities were observed in 52% or 97 patients.

Disk disease was identified in 91 of the 97 patients, including multilevel disease in 40%.

When body mass index was calculated for 108 of the children with available weight data, lumbar spine abnormalities were observed in 28 of 44 (64%) children with a BMI greater than the 85th percentile for age, compared with 28 of 64

(44%) children at or below a healthy weight.

The finding that overweight children are more likely to have disk disease might be intuitive, given what is known in the adult population, but this is the first study to document this association and provides additional evidence regarding the damage that childhood obesity can cause, said Dr. Burns, a fellow



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DR. BURNS

in diagnostic neuroradiology at The Children's Hospital at Montefiore in New York City.

“We have another link in the chain of the end-organ damage that can result from obesity, and from a public health perspective I think that's significant,” he said at a press briefing at the meeting.

The Centers for Disease Control and Prevention reports that 17% of American children, aged 6-11 years, and 18% of American adolescents, aged 12-19, are overweight.

The abnormalities observed in the study are typically associated with degenerative disease of the spine, which occurs with aging and is not usually seen until people are in their 30s, 40s, or 50s, coauthor and colleague Dr. Michael Lipton told reporters.

“We basically have evidence of something that is accelerating the aging process dramatically in these children,” he said.

“They are decades ahead of their time,” Dr. Lipton added.

The investigators excluded patients with trauma and scoliosis, as well as genetic, metabolic and developmental conditions with a predisposition toward spinal abnormalities.

Press briefing moderator Dr. Deborah Levine, a professor at Harvard Medical School in Boston, said that the findings are worrisome and emphasized the need to stem the rising tide of pediatric obesity in this country.

She did, however, question whether the study might have over-represented children with severe back pain, since MRI is not typically performed for this indication in children.

Dr. Burns responded that the reasons prompting patients to go to the emergency department and receive an MRI were not entirely clear, but that severity of pain might have been the case for many.

The study included 40 adolescents without back pain, and 8 (20%) of these patients had an abnormal MRI. Among these, abnormal MRIs were observed in six adolescents who had a BMI greater than the 85th percentile and two who



This MRI shows a large disc extrusion of the lumbar spine causing narrowing of the spinal canal and compression of the spinal nerve roots.

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had a BMI less than the 85th percentile, although the difference was not statistically significant, Dr. Burns said.

He said the findings do not support the routine use of MRI in children with back pain.

A prospective study is needed in obese children, not necessarily with back pain, to determine the longitudinal effects of obesity and whether lumbar disease is as common in adolescents as it is in adults.

Dr. Burns noted that in one study back pain accounted for only 0.4% of pediatric ED visits (Clin. Pediatr. 1999;38:401-6).

Dr. Burns and his associates disclosed no relevant conflicts of interest. ■

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