

Obese children have signs of heart disease typically seen in middle-aged adults

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The blood vessels of obese children have stiffness normally seen in much older adults with cardiovascular disease, Dr. Kevin Harris today told the Canadian Cardiovascular Congress 2010, co-hosted by the Canadian Cardiovascular Society and the Heart and Stroke Foundation. The clock is ticking and the shape of the 13 year-old-heart is changing – for the worse.

"We were surprised to find that these [obese children](#) already have stiff blood vessels," says Dr. Harris from B.C. Children's Hospital. "Aortic stiffness is an early indicator of cardiovascular disease in obese children." He says it is as if the aging process has been accelerated in their aorta.

The aorta is the largest artery in the human body. It carries and distributes oxygen-rich blood to all the other arteries and normally acts as a buffer to the pumping action of the heart. Increased stiffness of the aorta is typically associated with aging and is a strong predictor of future cardiac events and mortality in adults.

"The normal aorta has elastic qualities that buffer the flow of blood. When that elasticity is lost, aortic stiffness results – a sign of developing cardiovascular disease," Dr. Harris told the meeting. "Aortic stiffness is associated with cardiovascular events and early death."

The mean age of the children in Dr. Harris's study was 13 years.

Dr. Harris and colleagues evaluated 63 obese children and compared them with 55 normal weight controls. Blood pressure was taken, lipids evaluated, and body mass index measured. Children then underwent echocardiography, or ultrasound, of the heart and blood vessels. This test was used to determine the Pulse Wave Velocity in the aorta. This is a measure of how fast blood flows and was one of the measures used to assess aortic stiffness.

"The systolic blood pressure was only marginally higher in these obese children," says Dr. Harris. Blood lipid levels – total, HDL and LDL cholesterol – were normal. However, ultrasound of the heart showed that the Pulse Wave Velocity and other measures of arterial health were already abnormal in the obese children.

He says these findings are highly significant because the elastic qualities of their aorta were impaired even though other measures of heart health such as blood lipid levels and blood pressure were not dramatically different.

To see actual changes to the performance of the heart and [blood vessels](#) in obese children is extremely alarming, says Heart and Stroke Foundation spokesperson Dr. Beth Abramson.

"We know there is an association between unhealthy lifestyles and [heart disease](#). Our kids are at risk," she says. "Poor nutrition and inactivity are threatening their health and well-being. We must rethink the lifestyle standards we have accepted as a society to protect the future health of our kids."

The rate of childhood obesity has tripled over the last 25 years and it continues to increase, warns Dr. Abramson. Over 25 per cent of Canadian children between the ages of two and 17 years are overweight or obese, with the percent increasing with age from 21 per cent among

those two to five years to 29 per cent among those aged 12 to 17.

She notes that the health risks to overweight and obese children include heart disease, high blood pressure, and type 2 diabetes.

Dr. Harris says the next step should be to determine whether these changes are reversible with treatment such as improved diet and exercise. This test may eventually be helpful in monitoring the progression of [cardiovascular disease](#) in children and young adults.

Provided by Heart and Stroke Foundation of Canada

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