

Little-Known Liver Disease in Obese Kids May Raise Heart Disease Risk

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U *C San Diego Researchers Caution Physicians and Parents*

Overweight and obese children who have non-alcoholic fatty liver disease (NAFLD) are at much higher risk for heart disease according to a study led by researchers at University of California, San Diego School of Medicine (UCSD), Department of Pediatrics. The study results, posted online today, will be published in the July 2008 edition of *Circulation: Journal of the American Heart Association*.

“Our results demonstrate that obese children and adolescents with a definitive diagnosis of NAFLD have a more severe cardiovascular risk profile than their age, sex and BMI-matched peers,” said lead author Jeffrey Schwimmer, M.D., associate professor of pediatrics at the UCSD School of Medicine and Director, Fatty Liver Clinic, Rady Children’s Hospital San Diego.



Jeffrey Schwimmer, M.D., associate professor of pediatrics at the UCSD School of Medicine

Researchers studied 150 overweight children between the ages of 5 and 17, with and without NAFLD. The cases were well matched in age, sex and severity of obesity, with an equal number of boys and girls in each group. Results showed that children with NAFLD had significant cardiovascular risk, including higher levels of fasting glucose, insulin, total cholesterol, LDL (“bad” cholesterol), triglycerides and higher systolic and diastolic blood pressure than the control group. The children with NAFLD also had significantly lower levels of HDL (“good” cholesterol) than the control group.

Researchers found the distribution of the disease by race and ethnicity also varied significantly, with more Hispanic and Asian children in the fatty liver group and more white and black children in the control group. In addition, children with metabolic syndrome were five times more likely to have NAFLD as overweight and obese children without metabolic syndrome.

NAFLD is the most common cause of liver disease in children and is associated with metabolic syndrome, a clustering of risk factors for the development of cardiovascular disease and Type 2 diabetes. NAFLD is characterized by the presence of oily droplets of triglycerides in liver cells. More than 6 million children in the United States are affected.

“These data illustrate that fat accumulation in the liver may play a more important role than obesity itself in determining the risk for additional ‘weight-related’ metabolic complications.” said Schwimmer. “In children and adolescents, NAFLD may serve as a marker to stratify the cardiovascular risk of overweight and obese patients.”

Fatty liver disease often has no outward symptoms so it frequently goes undetected. Although some children will have symptoms such as abdominal pain or fatigue, the majority remain symptom-free until the disease is very advanced. Long-term studies are ongoing to determine the causes and consequences of fatty liver disease, according to the researchers.

“Roughly 25 percent of children with fatty liver will develop hepatitis as children or by their 20s,” Schwimmer said. “Of these, approximately 20 percent may go on to develop cirrhosis as young adults, with a subsequent life expectancy of seven years.”

Schwimmer noted that this study emphasizes the need for taking a more global view of an obese or overweight child’s health. “Overweight children age 8 or older and, especially those with symptoms of metabolic syndrome should be screened for NAFLD,” he said. “I think many parents have never heard of NAFLD, and many physicians are not aware of its prevalence and severity in children. Identification of NAFLD in a child should prompt counseling that addresses nutrition, physical activity and avoidance of smoking.

Schwimmer’s co-authors include Perrie E. Pardee, B.S., Division of Gastroenterology, Hepatology and Nutrition, Department of Pediatrics, UC San Diego; Joel E. Lavine, M.D., Ph.D., Division of Gastroenterology, Hepatology and Nutrition, Department of Pediatrics, UC San Diego and Department of Gastroenterology, Rady Children’s Hospital San Diego; and Aaron K. Blumkin, M.S., and Stephen Cook, M.D., Department of Pediatrics, University of Rochester Medical Center, Rochester, NY.

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Previous study results from UC San Diego investigators include:

- → NAFLD is present in 9.6 percent of the children and adolescents living in San Diego County (*Pediatrics*, October 2006)
- → The features of fatty hepatitis in children are distinctly different from those found in adults (*Hepatology*, October 2005)
- → Children with NAFLD are nearly all insulin resistant (*Journal of Pediatrics*, 2003)

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