

Metabolic syndrome linked to liver disease in obese teenaged boys

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Researchers studying a large sample of adolescent American boys have found an association between metabolic syndrome, which is a complication of obesity, and elevated liver enzymes that mark potentially serious liver disease.

The link between [metabolic syndrome](#) and the suspected liver disease did not appear in [adolescent](#) girls, said study leader Rose C. Graham, M.D., a pediatric gastroenterologist at The Children's Hospital of Philadelphia. There were ethnic differences among the boys as well, she added, between Hispanic and non-Hispanic males.

The study appears in the October 2009 print edition of the *Journal of Pediatric Gastroenterology and Nutrition*.

Metabolic syndrome is of concern as a risk factor for cardiovascular disease and type 2 diabetes, and is estimated to occur in 22 percent of U.S. adults and 4 percent of U.S. adolescents. It is defined by insulin resistance, increased [waist circumference](#), high blood pressure, and abnormal measures of [high density lipoprotein](#) ("good [cholesterol](#)") and triglycerides in the blood. The criteria are similar for pediatric metabolic syndrome, although there is some dispute over details of the definition.

In adults, researchers have shown an association between metabolic syndrome and a group of diseases called nonalcoholic [fatty liver disease](#) (NAFLD), which at its most severe, may progress to irreversible liver damage. The purpose of the current study was to investigate to what

extent metabolic syndrome in adolescents was associated with elevated levels of the liver enzyme alanine aminotransferase (ALT), a marker of NAFLD.

Graham and colleagues analyzed a nationally representative sample of 1,323 U.S. adolescents, aged 12 to 19, from the National Health and Nutrition Examination Survey. They found a strong association between metabolic syndrome and elevated ALT levels in adolescent males, but not in adolescent females.

While looking more carefully at this association in boys, they found that among Hispanic males, this association largely coincided with being obese, as measured by body mass index. The researchers expected to find this correlation, because for all ethnicities, obesity was already known to be a risk factor for both metabolic syndrome and NAFLD. However, they also found that among non-Hispanic adolescent boys, metabolic syndrome and high ALT levels were associated with each other, independent of obesity. "Something else seems to be going on, in addition to the effects of obesity," said Graham. "Some unknown factors may be at work here."

The finding may have implications for treatment, she added. Currently, the only known treatment for NAFLD is weight loss. "If some adolescents with metabolic syndrome may be susceptible to this [liver disease](#) regardless of whether or not they are obese, there may be other treatments yet to be discovered."

NAFLD is increasingly being recognized among overweight teenagers. "Our findings suggest that NAFLD in adolescents merits closer attention, and its treatment may require more than just weight loss," said Graham.

Source: Children's Hospital of Philadelphia ([news](#) : [web](#))

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