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Researchers isolate new risk marker for overweight children

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A study of 40 overweight children in Edmonton has revealed they all share something in common aside from being heavy: each one of them has high levels of apoB48, a structural protein found in intestinal cholesterol.

The children displayed high levels of apoB48 even as their LDL cholesterol levels, which are typically high in overweight adults, remained in the normal range.

In discovering high levels of apoB48 in these children, the researchers believe they've found a new and important clue to better understand how some adults are more susceptible to cardiovascular disease (CVD) than others.

"We don't consider these children to be at risk of developing CVD right now. But they have indicated apoB48 at levels that are the same as those that appear in adults who are considered at high risk; so, unless their levels decrease, they will become high risk as they age," said Dr. Spencer Proctor, a nutritional scientist at the U of A and a co-author of the study.

However, testing for apoB48 is currently rare, difficult and expensive, Proctor said.

The prevailing wisdom among researchers is that high LDL cholesterol, which is produced in the liver, is the best indicator of a patient's CVD risk, even though researchers struggle to explain why 40 to 50 per cent

of people who suffer cardiac episodes have "normal" LDL levels.

Proctor and his colleagues, including U of A obesity researcher Dr. Geoff Ball, believe that apoB48, which is found exclusively in a type of cholesterol produced in the intestine called chylomicrons, may complement LDL cholesterol as a marker that doctors should look for when gauging a patient's risk of developing CVD.

"We are not measuring the right things and not understanding all the processes that cause CVD," Proctor said. "This study adds to a growing body of evidence we've collected that indicates measuring apoB48 levels as a means to measure chylomicron levels may be an important piece to the puzzle in understanding just who is and who isn't at risk of CVD."

Proctor believes testing for apoB48 may become more common and less expensive as people realize how important it is in determining CVD risk.

And while Proctor and his colleagues believe chylomicrons contribute significantly to the development of CVD, they feel more tests need to be done to find out why. They currently don't know if a diet of sugary, high-fat foods is the sole cause of high levels of apoB48 in children or if high levels of apoB48 are the result of a genetic imbalance that does not allow some people to metabolize sugary, high-fat foods adequately.

"Right now we think it's probably a combination of both a poor diet and genetics that make a person produce high levels of apoB48," Proctor said.

He added that as we learn more about the effect of intestinal cholesterol, we will be better prepared to prescribe treatments to prevent CVD.

"For some people exercise and diet changes may be the best prescription, for others it may be a pharmaceutical intervention, and,

indeed, in some cases a combination of both may be required," Proctor said, adding that pharmaceutical companies are currently on the cusp of producing new drugs that target the reduction of chylomicron cholesterol.

"We already know that it's not simply how much you weigh that makes you susceptible to CVD. It's also how much fat you have and the type of fat you have that is important," Proctor said. "A marker such as apoB48 may be just the clue we need to determine whether or not you are at risk, and, if you are, the best methods we can prescribe to reduce the risk, particularly in our young population as they grow older."

Source: University of Alberta