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TESTING BLOOD FAT AFTER FASTING MAY NOT TELL WHOLE STORY

It may be more accurate to measure blood fats, known as triglycerides, after eating a meal instead of after fasting for several hours. A new study by researchers at the University of Maryland Medical Center and the University of Minnesota School of Medicine, published in the March *Journal of Nutrition*, finds that fluctuations in triglyceride levels are not picked up just by measuring the blood fats in a fasting state.

“Physicians typically perform triglyceride measurements after an overnight fast,” says cardiologist Michael Miller, M.D., associate professor of medicine and director of Preventive Cardiology at the University of Medicine Medical Center. “It turns out, however, that we may be missing useful information in assessing risk for a heart attack”.

Dr. Miller and his colleagues studied 17 healthy men and women and measured their triglyceride levels over several months. The first month, they were on a high-fat diet, with more than 40 percent of calories coming from fat. At the end of the month, the participants had their blood fats measured in the fasting state. Then, they drank a special “milkshake,” and blood fat measurements were taken every two hours during the day.

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TRIGLYCERIDE MEASURE--2

The “milkshake,” which is commonly used in blood fat studies, was a concoction of corn oil, vanilla or strawberry flavoring and sweetener.

The participants were then given a one month hiatus or “wash-out” period in which they were instructed to return to their usual diet. After this period, they entered the final phase of the study in which they were instructed to follow a low-fat diet for one month, consisting of no more than 30 percent fat, as outlined by the National Cholesterol Education Program. After that month, they once again had their blood fats measured in the fasting state, drank a “milkshake” and had their blood fats measured every two hours during the day.

The researchers were surprised at the results. “We had expected to find a reduction in fasting triglyceride levels after the volunteers ate low fat foods for a month,” said Dr. Miller. Instead, the fasting triglyceride levels were unchanged. However, the levels drawn after drinking the milkshake were significantly different.

“After the high-fat phase, following a milkshake, the levels of triglycerides were increased,” Dr. Miller noted. “If we had just measured fasting levels, as usual, we would have missed this important distinction.”

The researchers found that the same people had a variation of up to 15 percent in their triglyceride levels following a milkshake while they were on the high-fat, rather than the low-fat diet. These differences were not picked up with the fasting blood triglyceride tests.

(MORE)

TRIGLYCERIDE MEASURE--3

The higher peaks in blood triglyceride levels on the high fat diet may explain, in part, how hardening of the arteries occurs. Fat that is not broken down remains in the bloodstream and is eventually picked up by "scavenger" cells, which transport the fat to blood vessels throughout the body, including the coronary arteries. Over time, these fatty deposits can increase in size and lead to a heart attack.

The impaired ability to get rid of excess blood fat was detected only in the time period following the milkshake. "It leads us to conclude that the way we currently measure blood fats may not tell the complete story," says endocrinologist Angeliki Georgopoulos, M.D., associate professor of medicine at the University of Minnesota Medical Center in Minneapolis. "We now believe that valuable information may also be obtained by evaluating blood after you eat a fatty meal," she concluded.

These findings may help explain why some people with a normal cholesterol level still suffer a heart attack. "At least one out of every three heart attack patients has a normal cholesterol level," says Dr. Miller. "It is possible to have a high triglyceride level along with a normal cholesterol, and elevated triglyceride is a risk factor for heart attack, especially among women and people with diabetes," Dr. Miller adds.

Christina Dolinar at the University of Maryland Medical Center was a co-author with Dr. Miller and Dr. Georgopoulos. The study was funded by the American Heart Association.

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