

Do you know your triglycerides?

You should. Studies are finally showing that a high triglyceride level may threaten the heart.

Most health-conscious people know their total-cholesterol level; many know their "LDL" and "HDL" as well. But few people know their level of triglycerides, an abundant type of fat in the blood. That's because doctors have traditionally viewed all but the highest triglyceride elevations as mere reflections of an unfavorable cholesterol level, with no special significance of their own.

Now, studies are freeing triglycerides from cholesterol's shadow. That research suggests that triglycerides independently increase the risk of coronary heart disease. And they may do so at a surprisingly low level—possibly as low as the average in this country.

The theoretical threat

Both cholesterol and triglycerides are ferried through the blood by fat-protein particles called lipoproteins. When triglycerides reach a high level in the blood, they tend to displace cholesterol on the high-density-lipoprotein particles. (That cholesterol-lipoprotein complex is called HDL cholesterol for short, or even just HDL). The reduction in HDL cholesterol caused by high triglycerides is bad for the arteries: HDL is considered good because the cholesterol cargo is generally being hauled out of the arteries, rather than deposited in them.

Researchers used to regard that HDL-lowering tendency of triglycerides as the only reason that studies linked high triglycerides with an increased risk of coronary heart disease. Once you knew your HDL level, they believed, your triglyceride level wouldn't supply any independent information about your coronary risk. But recent research suggests that triglycerides may affect the arteries and the heart in ways that have nothing to do with HDL.

First, laboratory and animal studies indicate that certain triglyceride-bearing lipoproteins dump their load directly in the artery walls—just as low-density lipoproteins (LDL) dump their cholesterol cargo. Further, the body tends to break down those triglyceride carriers into a type of LDL that's particularly small and dense—and particularly harmful, since it can more easily infiltrate the artery walls and may be more likely to stick there. Most people whose triglyceride level exceeds about 150 milligrams per deciliter (mg/dl) are producing significant amounts of that small, dense LDL. Finally, several laboratory studies suggest that a high triglyceride level may promote blood clots—the trigger for most heart attacks.

Beyond the lab: The key studies

Several recent observational studies reinforce the notion that triglycerides independently threaten the

heart. In all those studies, the researchers adjusted for the effects of HDL, in order to isolate the impact of triglycerides.

In an eight-year Danish study of some 3,000 middle-aged and older men, those with the highest triglyceride levels faced more than twice the heart-attack risk of those with the lowest levels. Two Harvard studies took a different tack, retrospectively comparing heart-attack patients with other individuals. One study linked the highest triglyceride levels with nearly a threefold increase in heart-attack risk. The other found a 40 percent rise in coronary risk for every 100-point rise in triglycerides. (A 100-point rise would bring someone with an average triglyceride level to the currently accepted threshold for an elevated level.) A combined analysis of eight other observational studies linked an increased triglyceride level with a smaller but still significant increase in coronary risk.

Elevated triglycerides may threaten the brain as well as the heart: At least half a dozen studies, conducted in Canada, Europe, and Japan, have found significantly higher triglyceride levels in stroke patients than in their stroke-free peers.

Triglycerides may be deposited in the artery walls.

Testing: When to worry

Everyone should get a lipid analysis, which determines not only your total-cholesterol level but also your LDL, HDL, and triglyceride levels. The analysis typically costs about \$30 to \$50. To help ensure reliable results, consume nothing but water—and any required medications—in the 12 hours before the test, and avoid vigorous exercise for 24 hours before testing. Since triglyceride levels can vary widely from day to day, confirm any abnormal triglyceride score by taking a second and possibly a third test at least one week apart.

Current guidelines of the National Cholesterol Education Program set the threshold for elevated triglyceride levels at 200 mg/dl. But some studies suggest that the risk may start to rise at lower levels—as low as 100 mg/dl.

Considering the uncertainty, here's a sensible guideline: The greater your risk of coronary disease—based on the number and severity of risk factors—the closer your triglyceride threshold should be to 100 mg/dl rather than 200. Risk factors include a family history of early coronary disease (before age 55); a high LDL level (greater than 160 mg/dl if you have fewer than two other risk factors, 130 mg/dl if you have two or more other factors); a low HDL level (less than 35 mg/dl); obesity, particularly when the fat sits mainly around the abdomen rather than

Continued on next page



Shaping up

Triglycerides

Continued from previous page

the hips; hypertension; diabetes; smoking; physical inactivity; and being a man older than age 45 or a postmenopausal woman who doesn't take estrogen. Insulin resistance, often a precursor of diabetes, also becomes a significant coronary risk factor when it's accompanied by a high triglyceride level.

Treatment recommendations

While observational studies suggest that triglycerides independently boost coronary risk, no clinical trials have confirmed that using medications solely to reduce moderately elevated triglyceride levels—up to 400 mg/dl—offers benefits that outweigh the potential drug risks. So doctors usually don't prescribe medication to treat such moderate elevations alone. Fortunately, nondrug measures can sharply reduce elevated triglycerides—far more than they reduce high cholesterol levels. Helpful steps include losing weight, quitting smoking, exercising regularly, minimizing your intake of sugar and alcohol, and eating fatty fish, say, twice a week.

But if you already need medication to reduce an elevated LDL level, your doctor should try, if possible, to prescribe a drug that can also reduce any moderate elevation in your triglyceride level. The best choices for most people include atorvastatin (*Lipitor*), high-dose simvastatin (*Zocor*), or nicotinic acid (niacin). Other options include fenofibrate (*Tricor*) or gemfibrozil (*Lopid*). Those drugs, as well as niacin, are particularly useful in patients with borderline-high LDL, high triglycerides, and low HDL.

Note that a very high triglyceride level—above 400 mg/dl—clearly increases the risk of pancreatitis. A level that high may warrant drug treatment regardless of the LDL level if nondrug measures fail.

Summing up

There's now enough circumstantial evidence that high triglycerides threaten the heart to warrant taking certain steps. First get a complete lipid analysis, following the precautions described above to help ensure a reliable test result. Then, using the following general guidelines, discuss any confirmed triglyceride reading above 100 mg/dl with your doctor.

- Note that the need to reduce a triglyceride level in the gray zone—100 to 200 mg/dl—depends on the number and severity of your other risk factors for coronary disease.

- Try nondrug measures—losing weight, exercising regularly, stopping smoking, restricting sugar and alcohol intake, and eating fatty fish—to reduce an elevated triglyceride level. But if you already need medication to lower your cholesterol level, your doctor should consider prescribing a drug that can lower triglycerides as well.

- Use medication to treat a triglyceride level over 400 mg/dl that does not respond to nondrug measures, even if cholesterol levels are normal. ■

FITNESS UPDATE

◆ Cholesterol: Work out and eat right

Limiting fat and cholesterol in the diet to reduce blood cholesterol is standard medical advice. But recent findings suggest that it may take exercise for those dietary changes to do the job.

In a study published in *The New England Journal of Medicine*, Stanford University researchers randomly assigned some 400 people with low levels of "good" HDL cholesterol and moderately elevated "bad" LDL cholesterol to one of four groups. The first group went on the National Cholesterol Education Program's "Step-2" diet, which is very low in total fat, saturated fat, and cholesterol. The second group started with a supervised aerobic-exercise program three times a week for six weeks and then continued exercising on their own, doing at least the equivalent of walking 10 miles a week. The third group followed both the exercise program and the diet. And a control group made no changes in their usual behavior.

Neither diet nor exercise alone made a dent in LDL-cholesterol levels. But the two together reduced LDL by about 14 mg/dl among the women and 20 mg/dl among the men. (None of the regimens helped raise HDL levels.)

Based on those findings, the researchers speculate that, to be most effective, dietary measures to control blood cholesterol need to be coupled with exercise that burns body fat. As a plus, such exercise can also provide coronary benefits by controlling weight, cutting the risk of diabetes, reducing blood pressure, and strengthening the heart.

◆ Tai chi for mind and body

The ancient Chinese discipline of tai chi is known for promoting a sense of overall well-being and "alert relaxation." Recent research adds to the evidence that this virtually no-impact exercise also has genuine fitness benefits.

In one study, published in *Medicine & Science in Sports & Exercise*, volunteers age 58 to 70 who practiced tai chi roughly five days a week showed a 15 to 20 percent improvement in aerobic capacity and knee strength after one year. In a second study, presented at a meeting of the American Heart Association, older volunteers with elevated blood pressure who did tai chi for 12 weeks lowered their systolic blood pressure (the upper number) by 7 mm Hg—nearly as much as those who did a moderately intense aerobic-exercise program of walking and low-impact aerobics.

The best way to learn tai chi is from an experienced instructor. Classes are available through your local "Y," college programs, health clubs, martial-arts schools, and community centers. There are also many "how to" videos, often available from video-rental stores.