Be Aggressive in Lowering Triglyceride Levels

A Little Bit of Fat Infiltration Is a Lot

Those of us specializing in alternative medicine frequently find ourselves to be resort doctors, that is, doctors of last resort. Patients who seek our care often bring more medical concerns than can be addressed in one clinic visit. Prioritizing the conditions and considering how they interrelate therefore becomes an important component of our work. I take this opportunity to urge clinicians to prioritize early dietary and nutritional treatment of fatty liver disease.

Fatty liver disease often unfolds as follows. The body's ability to use fatty acids as an energy source becomes impaired. The fatty acids remain unused and can often be measured in the bloodstream as elevated triglycerides. Fat congests the liver and can lead to an -itis. I generalize to help explain a point: when the bladder angle tilts, preventing complete emptying, the residual urine can lead to cystitis. When seasonal allergies cause fluid in the nasal sinuses, sinusitis can occur. When the gallbladder spasms and its digestive fluids are not emptied, cholecystitis can occur. Similarly, a liver congested with fatty acids becomes inflamed. Eventually, the hepatitis can be measured as elevated liver function tests.

When the liver function tests exceed laboratory norms, other causes of hepatitis are evaluated. With a negative screen for alcoholism, viral hepatitis, and perhaps a few other associated conditions, the patient is often told that the liver just has a little fat.

Carnitine

Patients are often interested in the metabolic basis for supplemental nutrients. An explanation can increase a patient's commitment to taking the nutrient. A nutrient called carnitine can help reduce triglycerides. Carnitine can be compared to a shovel for a coal furnace, a forklift at a loading dock, or a fuel injector for a carburetor. Carnitine carries fat to the mitochondria. Carnitine provides the mitochondria with as much fat as it can use, thereby making the mitochondria more efficient. With carnitine's help, muscle mitochondria can convert more fat into usable energy.

Carnitine is found in food, and the body can make it as well. The body with a healthy metabolism is able to make enough carnitine for its needs. Nutritionists refer to such a nutrient as conditionally essential, meaning that when the metabolism is not functioning well, the nutrient needs to come from the diet. In this way, supplementing with carnitine helps give the metabolic engine what it needs to function properly.

Another reason to supplement with carnitine is that, in order to burn fat, the mitochondria must do double duty. The mitochondria need to burn the triglycerides that are formed from food, in addition to burning fat stored in adipose tissue.

Carnitine is not an essential nutrient, meaning the body is able to make it. So why take it? Medical science's take on carnitine was that it could treat inborn errors of metabolism. Safety and effectiveness for other uses was unknown. Meanwhile muscle gyms and vitamin pushers accorded carnitine miracle status and touted it as the best way to burn fat and preserve muscle. A rift formed. Carnitine was underutilized and insufficiently researched by the medical community, and it was used unsafely and inappropriately in pop-consumer settings. I studied carnitine so that I could help my patients make the most informed decisions possible on carnitine supplementation.

Then along came a study that showed carnitine can help strengthen the injured heart. The heart is a very specialized muscle. Did carnitine help spare this muscle simply by burning fat, or did it actually help strengthen muscle? Soon, another potential application for carnitine presented itself. Several studies irrefutably demonstrated that fats found in junk foods interfere with metabolism. Junk food fats are more difficult for the body to burn, I reasoned that even if my patients resolve to never eat junk food again, they will still have years of accumulated junk-food fat to burn. Carnitine can help burn stubborn fat in the context of a diet plan.
Science now provides evidence for urgency to this usually-slow-to-progress chronic medical condition. Here are the some of the lines of evidence.

Because It Opens the Barn Door
A liver with fat infiltration is an open barn door. The foxes can enter to snatch the chickens, and the horses and sheep can wander off. First, consider the sheep and horses: the liver produces endogenous antioxidants such as glutathione. An inflamed liver is less able to synthesize a robust defense to oxidative stressors. Its ability to maintain optimal ratios of muscle and bone-building hormones such as estrogens and DHEA may also be compromised.

Then there are the foxes: the number of chemicals harmful to human health just got a lot bigger, bigger by one-third according to a research article, "Food Web - Specific Biomagnification of Persistent Organic Pollutants," in the July 13, 2007 issue of Science. Canadian scientists demonstrated with modeling and field data how many potentially harmful chemicals are currently unmonitored. The current system tracks chemicals that accumulate in fish and therefore does not detect chemicals that are respired by fish gills but not by bird and mammalian lungs. In essence, the impact of these newly identified persistent organic pollutants on human health depends largely on liver health.

This edition of Townsend Letter offers timely information on keeping the barn doors closed.

Because There's a “Pounds-Off” Cure
If you can improve patients' liver function, you can improve their ability to build muscle and burn fat. The liver holds sway in the metabolism for deciding how each calorie will be spent. When more calories are used for repairing and building muscle, there is less accumulation of body fat. In other words, the adage “an ounce of prevention is worth a pound of cure” just got better. With fatty liver disease, an ounce of prevention is a pounds-off cure!

Since even the simplest nutrition interventions require patient “buy-in” to be successful, I would like to simplify and put the information in patient terms, as follows:
It's painfully ironic. Fat tissue is stored energy. Yet extra fat doesn't make us more energetic. When needed for energy, the fat doesn't budge. It's as if fat-burning metabolism is locked. When the body can't use fat for energy, it uses carbohydrates instead. A metabolism that runs on carbohydrate fuel is not able to burn fat. Instead, it burns muscle, and slim genes™ get buried deeper in the laundry pile.

For patients, too, I draw an analogy with how we fuel our car. If a gas station has a power outage, the fuel pumps will not function. No matter how many cars are lined up to fill empty gas tanks, and no matter how full the station's supply is, the fuel can't be pumped until power returns. Many dieters feel as though they have a power outage. Their
Optimizing Metabolism

Body fat doesn’t seem to be a usable fuel source. These dieters can achieve success much more easily when optimal nutrients restore power to the metabolic fuel pump.

Unlike the car’s engine, the body’s energy-conversion machinery is not in one central place. ATP synthesis is dispersed among the cells in locations called mitochondria. Collectively mitochondria produce about 90% of the body’s energy. Since muscle cells spend most of the body’s energy, it’s not surprising that muscle cells contain mitochondria by the thousands. Therefore, as many mitochondria as possible should be operating at peak performance in order to burn body fat.

Modern-day living is tough on mitochondria. Some are poorly constructed because of a shortage of omega-3 fats for mitochondrial membranes. Some mitochondria get pickled by an acidic pH, poisoned by toxins, shriveled by dehydration, or cooked by excessive heat. Mitochondria may be temporarily unable to perform their energy-converting function, or they may be permanently impaired.

Either the remaining mitochondria need to work at a higher capacity, or less fat will be converted. If muscle cell mitochondria are not working well, fat is slow to be converted into fuel, and a fuel backlog ensues. Running the metabolic engine with fewer mitochondria is only possible with compromise. Conversely, even if muscle mitochondria are few in number when working at peak efficiency, mitochondria can convert a lot of fat into fuel.

A common blood test called triglycerides can help determine if your mitochondria fall short of peak performance. The lipid profile is a commonly performed blood screen of different types of cholesterol, total cholesterol, and triglycerides. Most people are not as familiar with triglycerides as they are with cholesterol. Yet the triglycerides lab tells us a lot about the body’s metabolism. The triglycerides blood test literally measures fat in the bloodstream. The word triglyceride means three chains of fat linked together by glycerin. The triglyceride level is an indirect measure of mitochondrial function.

The blood specimen for triglycerides is drawn in the morning after the patient has fasted overnight. After eight hours of going without food, triglycerides from previous meals should have reached their destination, the muscle mitochondria. Before breakfast, the bloodstream should contain minimal triglycerides.

Lab test numbers signify the following:

- A healthy triglyceride level is 50-100. The 50-100 range indicates that there is not a backlog of fuel. The mitochondria are able to convert fat to usable energy.
- For most laboratories, triglyceride values of 100-150 are still considered within the normal range, albeit higher than recommended. It is more difficult to burn body fat when fasting triglycerides exceed 100.

- A triglyceride value above 150 is high. At very high levels, one can see the fat when drawing blood. A large backlog of fat waiting to be used as fuel is costly for health. Not only does it make burning fat very difficult, the fat becomes deposited in the liver, the heart, and other important organs. To prevent fat from depositing in the organs, medications to lower triglycerides are sometimes prescribed. Much can be achieved with diet and key nutrients, sometimes making medications unnecessary. If you have an elevated triglyceride value, it’s a big clue that your fat-burning metabolism needs repair.

Diet can lower the number of triglycerides formed. The way to lower triglycerides is to cut carbohydrates. This seems contradictory at first. If there is a backlog of fat, why not eat less fat? The fat that becomes backlogged in the bloodstream is primarily fat from carbohydrates. By eating fewer refined carbohydrates such as sweetened beverages, breads, and sugary foods, you can lower your blood triglycerides.

Another thing you can do in your diet is to eat better-quality fats. Cook with extra virgin olive oil for a start, and avoid any foods with partially hydrogenated fats, often called trans fats. Quality fats allow the mitochondria inside muscle cells to work better.

Because Early Treatment Is Simple, Powerful, and Measurable

I augment the dietary efforts of my patients in many ways. For those with elevated triglycerides, I recommend a three-month course of L-carnitine (see Sidebar) and repeating triglycerides and liver function tests. Often, liver function tests trend downward following treatment, even if they did not meet the laboratory criteria for being elevated.

Carnitine has helped many of my patients, but let me sound a note of caution. Carnitine is not a stand-alone miracle, and more is not necessarily better. It is unsafe to use carnitine as a diet plan. Like the other nutrients I describe in my book, it can be very helpful to get the most out of your diet plan.

Concluding Thoughts

Environmental toxins, low-nutrient foods, and obesity are like gnarly, grey clouds coalescing for a storm. While for some people, the storms will merely blow over, and there will be clear skies, this medical meteorologist is forecasting more fatty liver disease. I urge clinicians to treat steatohepatitis as early as possible. Liver support, dietary interventions, and nutrients such as L-carnitine that can lower triglyceride levels can be effective.