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Metabolic Syndrome –What is it and what can I do about it?

By: James L. Holly, MD

You may already be suffering from one of the most common - and often overlooked - diseases to strike Americans. It's not a deadly new virus, cancer, or heart disease. It's a disease, surprisingly enough, caused by your body's inability to make the most of the food you eat. It is estimated that over 43,000,000 Americans have this condition.

This condition has been called by a number of names: Syndrome X, insulin resistance syndrome, the deadly quartet and most recently, the Metabolic Syndrome. If the name isn't familiar, the symptoms might be:

- Feeling tired after you eat, and at other times when you shouldn't.
- Gaining a pound here and a pound there - and having difficulty losing them.
- Seeing your blood pressure creep up year and after year, and
- Finding that your cholesterol does the same.

Do I have the metabolic Syndrome?

If you have three of the following five characteristics, you have the metabolic syndrome and should be aggressively treated to avoid the development of Type II Diabetes Mellitus.

1. Triglycerides above 150
2. Waist Circumference greater than 40 for males and 35 for females
3. Blood Pressure greater than 130/85
4. Fasting Blood Sugar above 110
5. HDL below 40 for males and below 50 for females

At SETMA, we check every patient for the Metabolic Syndrome and have designed disease-state management tools to help you improve your health. These tools include:

1. The Metabolic Syndrome
2. Hypertension
3. Weight Management
4. Cholesterol Management, which includes triglyceride control and improving your HDL.
5. Diabetes

If you have the metabolic syndrome you must take steps to:

1. Lose weight
2. Stop smoking if you do
3. Lower your blood pressure
4. Lower your cholesterol and triglycerides
5. Control your blood sugar
6. Decrease the inflammation in your body by medication and diet

And, all of these will be done first by exercise and changing your eating habits.

Insulin Resistance is the key

Doctors have known about insulin resistance for decades, but only in the past 10 years have they gained a clearer idea of exactly how it derails your health. Insulin resistance is caused in large part by the over-consumption of refined carbohydrates, such as breads, pastas, and sugary foods. Eating too much saturated fat (found in beef) and omega-6 fatty acids (found in vegetable oils) also seems to increase the risk of insulin resistance.

Normally, after you eat a meal, your body breaks down carbohydrates into glucose, or blood sugar. The presence of glucose prompts the release of insulin, a hormone produced in your pancreas. Insulin helps transport glucose from the blood to cells, where it's burned for energy, or stored.

When a person eats a lot of refined carbohydrates year after year, a dangerous cascade occurs.

- Insulin levels remain chronically high, and
- Cells become less responsive - and resistant - to insulin.
- As a consequence, relatively little glucose gets burned and levels remain high.
- With chronically elevated glucose levels, insulin resistance evolves into diabetes.

At an American Diabetes Association (ADA) scientific symposium on antioxidants and diabetes, numerous researchers implicated elevated glucose as a major source of dangerous free radicals. Glucose, a highly energetic compound (and the primary source of energy in the body), spontaneously oxidizes itself and spins off large numbers of free radicals,

Free radicals, molecules with an unpaired electron, react with normal molecules in the body and oxidizes them, much the way heat, or oxygen turns butter rancid. When glucose is steadily higher than normal - above 120 mg/dL - it auto-oxidizes even more readily and spins off still more free radicals. Some of these free radicals oxidize cholesterol and set the stage for coronary heart disease.

High levels of glucose cause other problems as well. Glucose can bind to proteins and "crosslink" them. The process, called glycosylation, is akin to tying your body's proteins, which include your genes, into knots. Like free radicals, protein glycosylation has also been linked to aging and disease.

High levels of insulin create still more free radicals, leading to what researchers describe as "oxidative stress." High insulin levels increases the demand for vitamin E, which quenches free radicals. Insulin also helps convert calories into triglycerides and cholesterol, increasing the risk of coronary heart disease.

Insulin Resistance and Heart Disease

Until 1988, researchers studying insulin resistance focused on its role in diabetes. Then, Gerald M. Reaven, M.D., of the Stanford University Medical Center, built a strong case for insulin resistance as a cause of obesity, hypertension, and coronary heart disease.

"The fact that an insulin-resistance subject may not become diabetic does not mean that they suffer no untoward consequences," Reaven wrote. "Indeed, an argument can be made that the more insulin sensitive [in contrast to insulin resistant] an individual, the better off he or she is, and that the attempt to compensate for insulin resistance sets in motion a series of events that play an important role in the development of both hypertension and coronary heart disease."

Alpha-Lipoic Acid Helps

Some of the best ideas for preventing and reversing insulin resistance come from emerging treatments for adult-onset diabetes, the condition in which insulin resistance is most severe. One approach aims at reducing glucose levels (and consequently insulin levels) and the other uses vitamins to counteract free radicals generated by glucose.

A number of micronutrients help insulin efficiently move glucose into cells for burning. If you think of your body's cells as engines, refined carbohydrates provide plenty of high-grade fuel. But you also need spark plugs to efficiently ignite the fuel. One of the most promising of these biological spark plugs is alpha-lipoic acid.

A natural cell constituent, alpha-lipoic plays a fundamental role in converting glucose to energy. Researchers have known from animal experiments that it can lower and stabilize glucose levels and, in Germany, alpha-lipoic acid is sold as a "drug" for the treatment of diabetic polyneuropathy, a type of severe nerve pain.

Stephan Jacob, M.D., of the University of Tübingen, Germany, has described how 600 mg of alpha-lipoic acid supplement daily stimulated insulin activity, which safely lowered and stabilized glucose levels. It also made the patients more insulin sensitive and increased their glucose tolerance, both positive changes.

Other nutrients also help improve insulin sensitivity and, conversely, reduce insulin resistance. The mineral vanadium, found in vanadyl sulfate supplements, also improves insulin's ability to transport glucose into cells. With insulin working efficiently, the body needs and produces less of it. According to Barbara F. Harland, Ph.D., of Howard University, Washington, D.C., vanadium has been researched for 40 years and is close to being recognized as an essential nutrient.

Chromium, which is recognized as an essential mineral, also helps lower glucose levels. It is a component of the "glucose tolerance factor," a molecule essential for normal insulin function and glucose metabolism. Richard A. Anderson, Ph.D., a researcher at the U.S. Department of Agriculture, described a joint U.S./Chinese study in which diabetics received either daily supplements of chromium picolinate or dummy pills. In a small study, two hundred mcg of chromium picolinate daily safely lowered and stabilized blood sugar levels in diabetics in just four months. People taking 1,000 mcg of chromium daily ended up with glucose and insulin levels comparable to those of normal people.

The omega-3 fatty acids, or fish oils, also improve insulin sensitivity and reduce insulin resistance. The omega-3 fatty acids restore a balance disrupted by excessive consumption of omega-6 fatty acids and saturated fats.

Vitamin E Prevents Damage

Vitamin E also helps relieve some of the "oxidative stress" caused by excessive glucose and free radicals in diabetics. It's likely that non-diabetics with insulin resistance also suffer from oxidative stress, though to a lesser degree.

Many studies have reported that 400 IU or more daily can dramatically reduce the risk of coronary heart disease, the cause of death among 80 percent of diabetics - and the leading cause of death overall in the United States. In fact, it appears that the same process that causes coronary heart disease in most people is accelerated in diabetics.

What happens is this: free radicals generated by glucose oxidize the low-density lipoprotein (LDL) form of cholesterol in the blood. White blood cells scavenge the oxidized LDL, then infiltrate heart tissue and get stuck. This causes the cholesterol deposits characteristic of heart disease.

Vitamin E can neutralize many of these free radicals and retard the development of coronary heart disease. In one study, twelve hundred IU of natural vitamin E daily significantly reduced LDL oxidation and prevented white blood cells from sticking to the heart.

Insulin resistance takes years to become severe. If you pay attention to some of the early signs - higher blood pressure and elevated triglyceride and cholesterol - when you're in your 30s or 40s, you can reverse insulin resistance and stand a good chance of preventing diabetes and coronary heart disease when you're older.

Remember, it is your life and it is your health.