

Arthritis, Autoimmune & Allergy, LLC



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International Medical Research

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Summer 2014

Weight Loss Newsletter I

Treatment of Metabolic Syndrome-Modified Diet and Healthy Life Style

Metabolic syndrome is a growing epidemic throughout the world, affecting approximately 1 adult of every 4 or 5, depending on the country. The incidence increases with age; it has been estimated that in people over 50 years of age, metabolic syndrome affects more than 40% of people in the United States of America.

Metabolic syndrome is not a disease in itself, but a group of risk factors that occur together, increasing the likelihood of heart disease, stroke and diabetes. According to the National Cholesterol Education Panel, if you have at least three of the following characteristics, you're classified as having metabolic syndrome: abdominal obesity (a waist size greater than 40 inches for men, 35 inches for women); triglyceride levels of 150 or higher; HDL (good cholesterol) of less than 40 in men, 50 in women; blood pressure of 130/85 or higher; fasting blood sugar of 110 or more.

Most people who have metabolic syndrome have insulin resistance and obesity. Overweight people, especially those with excessive belly fat, tend to develop a resistance to insulin -- a hormone that regulates blood sugar levels, pushing sugar into the body's cells, where it is used for energy. When a person is insulin resistant, blood glucose, fatty acid and amino acid are not effectively delivered into the cells and remain in the blood stream. This process eventually develops into type 2 diabetes mellitus (DM). Other risk factors associated with metabolic syndrome include ethnicity (African American, Mexican American), family or personal history of DM, smoking, drinking, stress, unhealthy diet and sedentary lifestyle.

Often times, obesity stems from regularly eating a diet high in carbohydrates, especially sugar and refined carbohydrates, such as those found in cake, bread and pasta. Carbohydrates are chains of sugar molecules, distinguished as either simple or complex. Simple carbohydrates have one to two connected sugar molecules while complex carbohydrates have three or more. Simple carbohydrates and refined carbohydrates are quickly digested into sugar, which is then swiftly absorbed by the body, causing a rapid rise in insulin. Complex carbohydrates are digested at a slower rate, leading to a slower rise in insulin. Furthermore, excess protein and unhealthy fats high in omega-6 fatty acid can result in excessive insulin secretion.

A comprehensive program of weight loss that includes a diet low in refined carbohydrates, proper protein amounts and healthy fats, coupled with exercise, provides the foundation of treatment for metabolic syndrome. Weight loss increases HDL cholesterol and decreases LDL cholesterol (bad cholesterol) and triglycerides. Weight loss can also reduce high blood pressure and the risk of type 2 diabetes. Even a moderate weight loss of five to ten percent of total body weight can increase insulin sensitivity.

Additionally, medication therapy such as Belviq (lorcaserin HCL) or Qsymia (phentermine and topiramate) or even bariatric surgery may be indicated, especially if other measures have failed to produce satisfactory results. Finally, additional lifestyle changes should include smoking cessation, limitation of alcohol consumption, and stress management. If you develop metabolic syndrome, think of it as a wake-up call. It's time to get serious about improving your health.

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Obesity and Silent Inflammation

During our life, we are always in constant struggles with microbes and injuries. Our innate immune system and its inflammatory reactions, refined by hundreds of millions years of evolution, allow us to coexist with these organism while maintaining a state of wellness. The ancient Roman physician Celsius described this inflammation as pain, swelling, redness, and heat, while the ancient Greek described it as the internal fire.

There are two distinct types of inflammation. The first type, classic inflammation, results in pain and swelling. The second type of inflammation, chronic low-level inflammation or silent inflammation, exists below the pain threshold. Both types of inflammation are primarily driven by the production of pro-inflammatory eicosanoids from arachidonic acid (AA). AA is an omega-6 fatty acid which is affected by diet. Certain foods such as refined carbohydrates, refined vegetable oils, and animal proteins rich in omega-6 fatty acids, can activate the innate immune system and trigger the low-level inflammatory process; other foods such as fish rich in omega-3 fatty acid, inhibit this process.

Silent inflammation is caused by overproduction of pro-inflammatory eicosanoids which either come from food or are released from adipose, or fat, tissue. Obesity occurs when there is an excess accumulation of adipose. Fat cells were previously considered inert storage sites for excess calories. Unfortunately, fat cells are not as innocent as originally thought. They are in fact very powerful generators of pro-inflammatory fatty acids which cause chronic low-grade activation of the immune system and trigger silent inflammation.

Silent inflammation can linger for years, if not decades, and can gradually affect different tissues and organs such as the liver, pancreas, brain and blood vessels. It causes insulin resistance, immune activation, as well as other metabolic dysfunctions. All of this can lead to metabolic syndrome and type 2 diabetes. Silent inflammation can also destabilize cholesterol deposits on coronary arteries, triggering heart attacks or even strokes. Nerve cells in the brains of those predisposed to Alzheimer's disease are also affected by silent inflammation. It can even promote rapid cell division, causing healthy cells to turn into cancerous ones. These pro-inflammatory

eicosanoids that are supposed to fight invaders are now being used against your body!

Since silent inflammation is the driving force behind the accumulation of body fat, the vicious cycle of obesity and silent inflammation is difficult to break once formed. One must use proper calorie control, consume food rich in omega-3 fatty acid (such as vegetables, nuts, olive oil and fatty fishes), and consume low amounts of omega-6 fatty acid, refined grain products, and trans fats (found in cakes, pastries and margarine). This combined with regular exercise can break the cycle and prevent obesity related health problems.

Obesity and Osteoarthritis

Osteoarthritis (OA) of the knee is a leading cause of disability in people over the age of 65. Most cases of OA are the result of aging, wear and tear, and excess stress on a joint caused by obesity, overuse, or injury. In OA, moist cartilage wears down and becomes thin and rough. When enough cartilage wears away, the unprotected bones rub together, causing severe pain and reducing joint movement. As the bone tries to repair itself, bone spurs form, which makes the joints look knobby.

Our joints consist of two compartments: the "medial and the "lateral." Under normal gait condition, generally the greatest forces imposed upon the lower extremity are across the medial knee joint space during walking. Weight contributes to the total knee compressive load, which is about four to six times the body weight. For each 1lb of additional weight, the compressive forces across the medial compartment increase by 4-6lbs. The lateral compartment is less affected. Essentially, excess weight causes excess stress on cartilage and exerts a major impact on the progression of knee osteoarthritis, especially in the medial compartments.

An adult who has body mass index (BMI) of 30 or higher is considered obese. The National Health Assessment and Nutrition Examination Survey for 2009 through 2010 found that about one third of American adults were obese. Furthermore, 35.3 percent of men and 35.8 percent of women were obese. It is estimated that persons in the highest quintile of body weight have up to ten times the risk of knee OA than those in the lowest

quintile. The impact is also compounded in patients with deformed legs such as knock knee. Most obese people often have weak quadriceps muscles due to their sedentary life style. The weakness of the front of the thigh (quadriceps muscle) makes one further prone to developing knee osteoarthritis.

Some obese patients may eventually need knee surgery such as joint replacement. Although there is no absolute weight restriction for total knee replacement, some surgeons are reluctant to do total or partial knee arthroplasty on very obese patients because of concerns about increased complications of the surgery. Therefore, most surgeons encourage patients to lose weight before the procedure.

The adverse effects of being overweight on the knees are similar to those on the hips. Weight loss is the crucial step in preventing and treating knee and hip osteoarthritis. Weight loss can make a substantial difference in stopping the progression of arthritis and joint pain. If you are overweight or obese, it is never too late to lose weight through proper diet, exercise, drug therapy, or even gastric bypass surgery, if necessary, in order to reduce the risk of arthritis and other medical problems.

Obesity, Depression and Pain

In general, patients with fibromyalgia and other chronic pain syndromes experience generalized aching, extreme fatigue and insomnia. However, the etiologies of fibromyalgia and chronic pain are unclear. Fibromyalgia seems to be associated with genetic predisposition and environmental factors. The disturbance of neurotransmitters and hormones play an important role in developing fibromyalgia and chronic pain. Depression, sleep disturbance, and obesity are also commonly associated with pain disorders. Like the famous question, "What comes first, the chicken or the egg?" The relationship between chronic pain, depression, and obesity is complex and interrelated.

Extended pain can cause a person to become depressed. People with a chronic condition such as osteoarthritis, rheumatoid arthritis, chronic back pain, or fibromyalgia, can become depressed because of increasing pain severity, interference with daily activity, and poor response to treatment

and stress. Depression, which produces feelings of gloom, agitation, loss of energy, and worthlessness as well as changes in appetite and sleeping habits, can predispose a patient to develop chronic pain and obesity.

Chronic pain and depression frequently go hand-in-hand and lead to significant disability. Neurotransmitters, chemical substances produced and regulated within the brain, keep everyday pain sensations in sync. When these neurotransmitters become unbalanced as a result of depression, the brain becomes incapable of processing the transmitted pain signals properly, causing the signals to be exaggerated or even distorted. The prognosis of combined depression and chronic pain is poor compared to individuals with depression or pain alone.

Similarly, due to lack of exercise and seeking comforting food as a result of pain, it is not uncommon to see chronic pain patients who are overweight or obese. Multiple epidemiological studies show that fibromyalgia patients are highly likely to be obese (40%) or overweight (30%) when compared to healthier patients. Excess weight is known to aggravate fibromyalgia symptoms: the more severe the obesity, the more severe the fibromyalgia symptoms. Those who have a BMI of 35 or higher experience the worst symptoms and physical functioning. Several mechanisms have been proposed to explain "the hidden link" between fibromyalgia and obesity. A plausible explanation for the close relationship is the possibility that excess body fat triggers metabolic changes that produce inflammation and pain. Notwithstanding, obesity is also commonly associated with depression. Obesity can cause poor self-image, low self-esteem, and social isolation, all known contributors to depression.

Chronic pain, depression and obesity create an almost unbreakable, vicious cycle. Without treating depression and obesity, it is difficult to manage chronic pain successfully. The combination of antidepressants with relaxation training, positive attitude, healthier diet, and regular exercise, is the best treatment to strategically break this cycle and effectively control pain, depression, and obesity.

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New Weapons in Battle to Lose Weight

The National Health Assessment and Nutrition Examination Survey for 2009 through 2010 found that about one third of American adults were obese. Due to the numerous healthcare conditions that can develop as a result of obesity, this has escalated from a personal issue to a national crisis. Only some patients are able to lose weight with diet and exercise alone. Weight loss drugs should never be the first choice for patients; however there are new pharmaceutical treatment options available for those who struggle with weight loss. Those typically eligible for weight loss drugs have a BMI over 30 kg/m² or those with a BMI greater than 27 kg/m² and have a significant weight related condition, such as type 2 diabetics, hypertension, or high cholesterol.

Some prescription weight loss medications are stimulants, which are recommended only for short-term use, and therefore are of limited usefulness for extremely obese patients due to their need to reduce weight over months or years. Appetite is regulated by a close interplay between the digestive tract, adipose tissue, endocrine organs and the brain; it has a relationship with every individual behavior. Developing a non-stimulant medication that controls appetite and hunger has been a priority for the pharmaceutical industry.

After banning Amphetamine, Fen-pen, Dexfenfluramine, Ephedra, and Subutramine due to severe side effects, there were no options on the market since no new weight loss drugs were approved between 1999 and 2012. Finally, in 2012, the FDA approved two weight loss drugs: Qsymia and Belviq. The new weight-loss drugs were designed with the previous drugs' safety concerns in mind.

Qsymia combines low doses of topiramate, a generic drug used to treat seizure and migraines, and phentermine, a stimulant that suppresses appetite and gently increases metabolism. The phentermine acts soon after the pill is taken while the topiramate activates later in the day and creates a sense of feeling full. While the mechanism action of topiramate is not entirely known, one of its effects is the alteration of taste; this lessens the reward of eating. Common side effects from Qsymia include parenthesis, change in taste, dry mouth, constipation, and insomnia. Despite this, two years of clinical trials has been found Qsymia to be effective and safe.

Belviq is meant to target specific receptors for appetite in the brain and trick the body into feeling full. During two years of clinical trials, patients on Belviq lost about 5-10% of their original weight. Total cholesterol, LDL cholesterol, and triglycerides were also significantly lowered. The common side effects are headache, dizziness and nausea. Currently, a pharmaceutical company is conducting post marketing research studies to ensure levels of cardiovascular events are not increasing when using Belviq.

Both Osymia and Belviq can both be used long term as long as there are benefits and no side-effects. Remember, weight-loss drugs are appropriate only as an addition to diet, exercise, and lifestyle changes – not a substitution!

