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Cardiometabolic Risk Syndrome Part I Introduction

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Your Life Your Health

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One of the most interesting “syndromes” in medicine and one which affects more people than are aware of it has been known by several different names. You may already be suffering from this syndrome which is often overlooked. 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.

Because this syndrome is so common and because it is so complex, this week's article will begin a series of articles which will address each element of the syndrome. If you will bear with us, I believe by the end of this series you will understand a great deal more about how to improve your health and about how to ask your healthcare provider for special attention to this syndrome and its impact upon your health.

This syndrome was first called “Syndrome X”; then it was called “Insulin Resistance Syndrome,” because it is thought that the an abnormal response to insulin is the principle causative factor in the condition. However, because it is associated with a number of metabolic abnormalities, it became known as the “Metabolic Syndrome”. It has also been called “The Deadly Quartet” in recognition of the four underlying elements of the condition.

Cardiometabolic Risk Syndrome

However, because of this syndrome's contribution to the rise of heart disease, the American Diabetes Association (ADA) has embarked upon a campaign to change the name again to “Cardiometabolic Risk Syndrome”. The ADA's *Cardiometabolic Risk Initiative* (CMRI) is a national effort that stresses the association between diabetes, heart disease, and stroke. CMRI encourages physicians and the public to adopt cardiometabolic risk (CMR) as an umbrella term that will help them better understand and manage all cardiovascular and diabetes risk factors.

The ADA hopes to replace the term “metabolic syndrome”, which is controversial, yet is becoming a more common part of medical parlance, with CMR, which is deemed a "more useful and evidence-based paradigm to help patients achieve better health outcomes." The idea of metabolic syndrome as a cluster of variables—such as obesity, hypertension, low HDL, high triglycerides, and impaired fasting plasma glucose—increases a person's risk of cardiovascular disease.

Whatever the condition is called, the symptoms are familiar to many people; they are:

- 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

Because of electronic medical records, at SETMA with the click of a button, we check every patient for the Cardiometabolic Risk Syndrome and we have designed a chronic disease-state management tool to make certain that you receive care based on the latest research on this subject. These tools include:

1. The Cardiometabolic Risk 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, and avoid second-hand smoke if you don't
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

All of these changes will be accomplished first by physical exercise and second by changing your eating habits.

Three major factors contribute to the "metabolic syndrome; they are:

- Inactivity
- Abdominal fat
- Insulin Resistance – your body's failing to respond as it should to insulin.

If you have abdominal obesity -- that is fat around your abdomen -- you are at very high risk for developing one or more of the following conditions, all of which have negative affects on your health and all of which are either a cause, an affect or a cause and an affect of the Cardiometabolic Risk Syndrome:

- Insulin resistance
- Impaired Fasting glucose
- Type 2 Diabetes
- Hypertension
- Hyperinsulinemia
- Endothelial dysfunction -- leading to hardening of the arteries and heart disease
- Elevated levels of C-Reactive Protein -- reflecting a very high risk for heart disease and heart attack
- Other Inflammatory Markers
 - Uric Acid
 - Plasminogen Activator Inhibitor I
 - White Blood Cells
 - Homocysteine
- Increased blood viscosity -- making you at risk for a stroke or blood clot
- Increased Fibrinogen levels -- this has the same affect as increased blood viscosity
- Ca⁺⁺/Mg⁺⁺
- Premature atherosclerosis

Again, all of these complications are treated effectively by weight reduction and increased activity. While there are medications which can diminish the complications of abdominal obesity, nothing gets rid of it like weight reduction.

The presence of the "metabolic syndrome" has shown increased disease risk as follows:

- The metabolic syndrome increases risk for CHD and stroke 3 fold
- The metabolic syndrome increases risk of cardiovascular death 5 fold
- The metabolic syndrome increases the risk of development or progression of carotid atherosclerosis.

Being sedentary -- inactive -- and being fat are not without serious health consequences. All of us know this, but we must face this fact and determine to something about it.

Treatment of the Cardiometabolic Risk Syndrome (CMRS)

The primary goal of treatment for CMRS is to prevent the development of type 2 diabetes, heart attack and stroke. Usually, this can be accomplished with an aggressive regimen of self-care strategies focusing on diet and exercise. You don't need to battle CMRS on your own, though. Your doctor may routinely monitor your weight and your blood glucose, cholesterol and blood pressure levels to ensure that lifestyle modifications

are working. He or she may also prescribe medications to control the syndrome's individual risk factors, including:

Weight-loss drugs. Some doctors may prescribe weight-loss drugs as part of a complete weight-loss plan that also includes a healthy diet and exercise. The two weight-loss medications most commonly prescribed are sibutramine (Meridia) and orlistat (Xenical). Don't, however, ask your doctor for weight reduction medication unless you are serious about regular participation in an ongoing weight management program. Don't ask your doctor for "diet pills" unless you have seriously decided to take personal responsibility for your own health.

According to the National Heart, Blood, and Lung (NHLBI) Institute Guidelines on the Identification, Evaluation, and Treatment of Overweight and Obesity in Adults and the US Food and Drug Administration (FDA), "diet pills" (pharmacotherapy) is indicated for:

- Obese patients with a BMI \geq 30 or
- Overweight patients with a BMI \geq 27 and concomitant obesity-related risk factors or diseases, such as hypertension, diabetes, or dyslipidemia.
- However, the BMI threshold is only one part of the criteria for medication treatment. For patients who meet BMI criteria, pharmacotherapy should be considered only if they:
 - Will be taking the medication in conjunction with an overall weight management program, including a reduced-calorie diet and increased physical activity
 - Have realistic expectations of medication therapy
 - Do not have other medical conditions or take other medications that are a contraindication for obesity drugs

Successful use of anti-obesity medications requires that patients deliberately and consciously alter their behavior for weight loss to occur. In other words, the pharmacological action of anti-obesity medications must be translated into behavior change.

Insulin sensitizers. These are drugs which help restore your body's response to insulin while you are losing weight and beginning an exercise program. Doctors use thiazolidinediones (Actos and Avandia) and metformin (Glucophage, Glucophage XR) to decrease insulin resistance in people with diabetes. These medications may help improve insulin metabolism in people with metabolic syndrome. If you routinely have a blood sugar at or above 130, you have already lost 50% of your insulin-producing capacity in your pancreas and should be on these medications.

Aspirin. Your doctor may prescribe aspirin to reduce your risk of heart attack. Obesity and the metabolic syndrome is an inflammatory process. The most recent research lists prothrombotic (predisposition for blood clots and strokes) and proinflammatory (predisposition for heart attack and hardening of the arteries) as components of the Cardiometabolic Risk Syndrome. Abdominal obesity is one cause of elevated levels of the inflammatory mark, C - reactive protein (CRP), because excess adipose tissue

releases inflammatory cytokines that elicit higher CRP levels. As the number of components of the metabolic syndrome increases from 0-5, the CRP level rises linearly. CRP adds important prognostic information regarding future vascular risk at all levels of severity of the metabolic syndrome.

Medications to lower blood pressure. The major types of medications used to control high blood pressure include diuretics, angiotensin-converting enzyme (ACE) inhibitors, calcium channel blockers and beta blockers. The controlling of the blood pressure is critical. As the blood pressure goes up 20 mm of mercury from 110, the risk for heart disease and stroke goes up over 100%.

Medications to regulate cholesterol. Medications such as niacin, statins and fibrates can improve your cholesterol in the following ways: they can reduce your level of low-density lipoprotein (LDL) cholesterol -- the "bad" cholesterol, increase your level of high-density lipoprotein (HDL) cholesterol -- the "good" cholesterol, and decrease the level of triglycerides -- another "bad" component of cholesterol.

Exercise and weight loss

There are four principles which should guide your exercise which is directed toward weight loss. They are:

- Regularly incorporate cardiorespiratory workouts that are low intensity for a longer duration. Rationale: The majority of the research shows that women derive a greater proportion of their energy expenditure from fats during low to moderate intensity exercise, relative to men. Thus, this will improve fat metabolism, particularly for females.
- Incorporate some cardiorespiratory workouts that are of higher intensity for a shorter period of time. This may best be realized with high intensity continuous training or perhaps with interval training. Rationale: As exercise intensity increases, the percent of energy derived from fat decreases. However, the absolute amount of energy derived from fat is actually increased, for males and females. As exercise intensity increases, so does total energy expenditure (caloric expenditure). Even though a smaller percentage of the energy expenditure is coming from fat, more kilocalories of fat are burned, because there is greater absolute energy expenditure.
- Incorporate various modes of training, often referred to as cross-training. Rationale: The theory of multi-mode training implies that by training on different modes of exercise, the body is averted from getting overly fatigued and from overuse of the same muscles in the same movement patterns. This helps to thwart the occurrence of musculoskeletal system stress, aiding in the prevention of muscle soreness and injuries. Therefore, theoretically, a person will be able to safely do more work, more frequently, which equates to higher total energy expenditure and fat utilization.
- Vary the above workout designs regularly! Endeavor to find a satisfactory method where cardiorespiratory workouts vary either within each week, weekly, bi-weekly,

or any combination of all. Rationale: Similar to the above, varying the workouts provides a new stimulus to the body's cardiorespiratory system in an effort to avoid the consequences of overuse exercise fatigue.

If you are overweight, lose weight; if you are obese, consider yourself in an emergency health condition. Get yourself involved immediately in a medically management weight management program which majors on your responsibility for taking charge of your future. SETMA has such a program if you are serious about getting healthy.

Remember, it is your life and it is your health. Ultimately, the person you are hurting with overeating and with a sedentary life style is yourself. Next week, Cardiometabolic Risk Syndrome Part II Insulin Resistance.