week) have half the risk of developing metabolic syndrome than those who are inactive.

If lifestyle modification alone does not improve your health risks, your doctor may prescribe one or more of the following medications:

- Insulin sensitizers to help lower blood glucose and insulin levels
- Blood-pressure-lowering medications
- Medications to decrease "bad" cholesterol (LDL) and increase "good" cholesterol (HDL)

Leading a healthy lifestyle now can reduce your risk of developing the health risks associated with metabolic syndrome as you get older. Effective prevention includes eating a healthy diet, being physically active and maintaining a healthy weight

How VLCC experts can help you manage your condition?

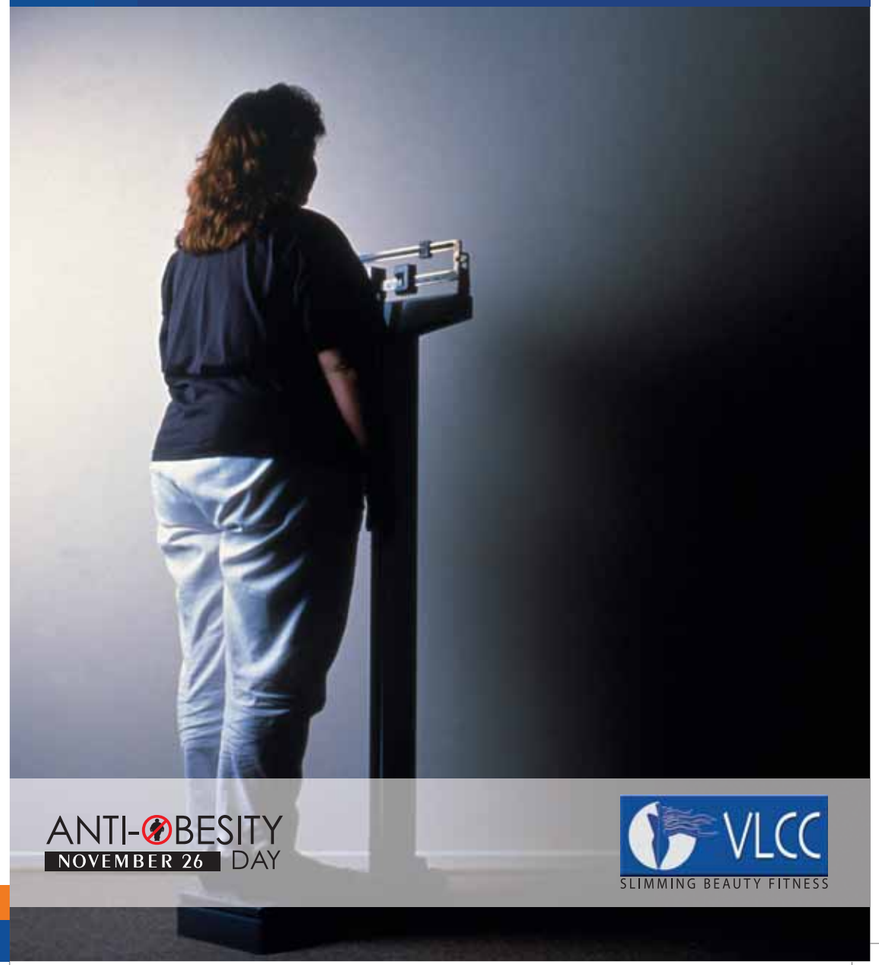
VLCC experts can help you to manage this condition by helping you to lose weight and advising appropriate changes in diet and lifestyle. Diet plan takes into consideration a balanced diet approach focusing on consumption of fruits & vegetables, whole grains, non fat dairy products, lean meat, fish and low in saturated fat, total fat and refined carbohydrates.

Diet counselors act as transient support system to prepare & motivate clients to incorporate gradual changes. They advise behaviour and lifestyle modification to reduce both weight as well as waist circumference.

There is a beneficial effect of exercise on blood pressure, cholesterol levels and insulin sensitivity. The physiotherapists, fitness experts & counselors at VLCC plan an exercise program comprising both active and passive exercise as per your lifestyle, fitness level and health condition.

SYNDROME X

VLCC Health Information Series-I



What is Syndrome X?

Syndrome X, also known as metabolic syndrome, is a group of conditions that put you at risk for heart disease and diabetes. These conditions are:

- High blood pressure
- High blood sugar levels
- High levels of triglycerides, a type of fat in your blood
- Low levels of HDL, the good cholesterol in your blood
- Too much fat around your waist

The cause of metabolic syndrome might be insulin resistance. Insulin is a hormone your body produces to help you turn sugar from food into energy for your body. Insulin resistance is the inability of the body to deal with dietary carbohydrates and sugars properly. At the cellular level this means that the insulin receptors that allow transport of blood sugar into the cell are blocked from accepting insulin and so the blood sugar can't get through, leading to both high blood glucose and high insulin levels, as the pancreas tries to overcome this resistance by producing extra insulin. If you are insulin resistant, too much sugar builds up in your blood, setting the stage for disease.

What are the causes of Syndrome X?

Genetics and the environment both play important roles in the development of the Syndrome X.

Genetic predisposition, a family history that includes type II diabetes, hypertension and early heart disease greatly increases the chance that an individual will develop the metabolic syndrome.

Environmental issues such as high carbohydrate diet, low activity level, sedentary lifestyle, and progressive weight gain also contribute significantly to the risk of developing the metabolic syndrome.

- Excess weight & excess carbohydrate intake. The vast majority of overweight people have high levels of insulin. Ingestion of too much refined carbohydrate triggers the release of high levels of insulin to deal with it. Insulin stores excess carbohydrate as fat and suppresses fat stores being released and burned for energy. So we get fatter and fatter and it becomes more and more difficult to lose weight
- Sedentary lifestyle and Lack of exercise
- Mineral and nutrient deficiencies-insulin requires many minerals and nutrients to work properly in the body. Common deficiencies of chromium, magnesium and zinc can increase insulin resistance
- Increased stress – Studies have shown that people who don't get enough rest and are under increased stress have high levels of blood glucose and insulin resistance. Most people are under increased levels of stress, from juggling work, family, finances and modern life

How is Syndrome X diagnosed?

Syndrome X can be diagnosed when two or more of its related disorders occur simultaneously:

- Insulin resistance and glucose intolerance. Elevated or erratic levels of glucose with insulin resistance. **Warning sign:** fasting glucose above 110 mg/dl and post parandial blood sugar of more than 140 mg/dl
- **Abdominal/Central obesity:** a waist circumference over 90 cm in men and over 80 cm in women (Asian)
- **Abnormal blood lipids:** Elevated total cholesterol and triglycerides and low HDL (of less than 40 mg/dl in men and 50 mg/dl in women). **Warning sign:** total cholesterol above 240mg/dl and triglycerides above 150mg/dl
- **Hypertension: Warning sign:** consistent blood pressure higher than 130/90 mm Hg

Right now, if you are over 50 years, you have a more than 1 in 3 chance of developing Syndrome X and if you already have Syndrome X, you are at a 3.5 times greater risk of death from coronary heart disease. You also have an increased risk of liver and kidney disease and possibly cancer

What are the symptoms of Syndrome X?

- The commonest symptom is weight-gain
- Failure to lose weight
- Unexplained weakness
- Associated fatty liver
- Central obesity
- Associated symptoms of diabetes
- Associated symptoms of hypertension

What are the complications of Syndrome X?

Although you may not notice any changes in the way you feel, having Syndrome X dramatically increases the risk of serious health problems including diabetes, heart disease and stroke. In fact, the more health risks you have, the more likely you are to develop these conditions.

Will obesity lead to Syndrome X?

If you're overweight, chances are that you crave carbohydrates. This is actually a physiological craving caused by the way your body chemistry over-reacts to eating sweets and carbohydrates. If excess glucose remains in circulation, high insulin levels will stimulate lipogenesis (fat production and storage). To compound the problem, there is evidence that high insulin levels trigger the hypothalamus (the master gland) to send out hunger signals.

Thus, many cases of obesity are due to an imbalance of the hormone insulin. If insulin is not rapidly cleared from the blood stream after a meal, it will cause an individual to feel hungry. Usually high insulin will signal the body to stop eating, but if a person has chronically elevated glucose levels due to inefficient insulin, he may eat more. Ultimately, the more refined carbohydrates a person eats, the hungrier he or she may become. Even if you eat as few as 800 calories a day, if you are sugar sensitive and those calories are from carbohydrates, you may find that you still gain weight.

How is Syndrome X treated?

The goal of treating Syndrome X is to treat both the underlying cause of the syndrome and also to treat the cardiovascular risk factors if they persist.

Majority of people with Syndrome X are overweight and lead a sedentary lifestyle. Lifestyle modification is the preferred treatment of metabolic syndrome. Weight reduction usually requires a specifically tailored multifaceted program that includes diet and exercise. Sometimes medications may be useful. One study showed that individuals who are physically active (30 minutes of activity at least 5 times per