



METABOLIC SYNDROME, THE PRE-DIABETIC STATE

Formerly Known as... Syndrome X

It's a familiar picture in middle age: high blood pressure, abdominal obesity, altered blood fats, atherosclerosis, and more. Now that the causes of **METABOLIC SYNDROME** are understood, the old name "Syndrome X" has been dropped. This is the final step in a progression leading to Type 2 Diabetes. The seriousness of metabolic syndrome should not be underestimated: the risk of heart attack under metabolic syndrome is equal to heart attack risk when diabetes is present.

Most people know that **INSULIN** is a hormone, secreted by the pancreas. It stimulates the uptake of blood sugar (**GLUCOSE**) by cells throughout the body. In a situation known as **INSULIN RESISTANCE**, the **INSULIN RECEPTORS** on cell membranes have become blunted. To enable glucose to enter cells, the pancreas compensates by producing excessive insulin.

High insulin level is what causes the symptoms of metabolic syndrome listed above. It also makes insulin resistance worse, in a vicious circle with more and more insulin secretion. Finally, insulin resistance may become so severe that it can no longer be compensated by greater insulin release. That is when diabetes emerges, with elevated blood glucose.

Causes Of Metabolic Syndrome

- Prolonged stress, with elevation of the adrenal hormone cortisol. Cortisol responds to stress by stimulating release of stored glucose for energy. More glucose means more insulin release, feeding into the insulin resistance cycle.
- Nutrient deficiencies – trace minerals are required by insulin receptors, and B vitamins are needed to burn glucose.
- Diet Choices – too many carbohydrates: starches and especially sugars, without enough protein and fiber. Also important are the Omega 3 fats, such as fish oil.
- Factors which interfere with insulin receptors on cell membranes:
 - Environmental toxins
 - Excess body fat, made worse by elevated cortisol
 - Chronic inflammation (including inflammation due to food allergies)

What To Do – Reversing The Causes

- Diet correction and weight loss are high priorities.
- Nutritional supplements can compensate for prior deficiencies.
- Herbal agents are available to sensitize insulin receptors.
- Stress must be addressed to reduce cortisol.
- If these measures are not sufficient, screening should be done for environmental toxins.

continued next page

Case Study: Neuropathy

This 56 year old woman came to my office complaining of numbness in both arms and both legs. Physical exam showed displacement of the lower back and neck, but she did not have any pain in these areas. Such widespread numbness is unlikely to be caused by spinal displacement alone, without other factors. She had significant abdominal obesity and her fasting glucose was above the optimal level. She had not been diagnosed with diabetes, but I suspected metabolic syndrome.

I performed acupuncture together with gentle spinal correction using therapeutic positioning. Aligning the spine helped the numbness, but did not eliminate it. She was given the anti-oxidant lipoic acid, as well as a nutritional/herbal formula to compensate for nutrient deficiencies and re-sensitize insulin receptors. She also started a weight loss program, and the numbness was gradually reduced.

The case demonstrates how multiple factors can converge to create a symptom. The patient was not tested for environmental toxins, which may cause neuropathy in their own right as well as interfering with insulin receptors. Although the numbness is very much improved, I would still urge this patient to have toxin testing.