Pre-Operative Laboratory Evaluation

(Glucose Metabolism/Cardiovascular health)

**Fasting Glucose, Hemoglobin A1c (Hgb A1c), Triglyceride/HDL Omega 3:6 Red Blood Cell (RBC) Intracellular Content**

Acute elevated fasting glucose levels around surgery are associated with poor surgical outcomes. Hgb A1c is a chronic serum marker reflecting sustained periods of poor glucose control reflecting red blood cell glycosylation. Levels above 5.7 are considered pre-diabetic and above 6.3 are classified as diabetic. Elevated Hgb A1c values are a risk factor for surgery. They are associated with increased hospital stay, increased risk of wound infection, and kidney failure.

Early identification of patients at risk for acute or chronic hyperglycemia, before surgery, has shown to be successful in pre-operative management for improved Hgb A1c and glucose control on the day of surgery.

Dr. Prusmack's lab work includes early screening of fasting glucose and Hgb A1c levels, so that patients with high levels can be managed pre-operatively through a collaborative approach of the patient’s primary care doctor, Dr. Carriere, the anesthesiologist, and Dr. Prusmack to counsel the patient on diet and treatment, if necessary. The goal is to maximally decrease the Hgb A1c the day of surgery and to aggressively treat perioperative glucose levels, in order to minimize surgical risks and improve outcome.

In addition to the diet and medical recommendations, omega 3 fatty acids, chromium picolinate, or cinnamon supplements may be recommended. Use of cinnamon has shown to reduce fasting glucose between 10-29% and decrease Hgb A1c 0.83-4.3%, although some studies showed no effect. In a recent meta analysis, chromium supplementation was shown to significantly improve Hgb A1c − 0.55% and fasting glucose − 1.15 mm. Chromium also significantly reduced triglycerides and increased HDL-C levels. Omega 3 fatty acids have also shown positive results on improving insulin sensitivity in prospective interventional studies, in both healthy and pre-diabetic patients, although the majority of clinical trials on patients with true type 2 diabetes have shown minimal effect.

**Triglyceride/HDL Ratio** is an excellent index of overall cardiac health and an effective predictor of cardiovascular disease. The ratio illustrates the measure of the “good” cholesterol in comparison to triglycerides. In a study of healthy subjects, elevated triglyceride/HDL ratios were significantly associated with the presence of insulin resistance. Therefore, the ratio can serve as an early indicator to help prevent diabetes by illustrating the need for increased moderate intensity exercise, a healthy Mediterranean diet, and a healthy lifestyle.

Low HDL is associated with increased risk of cardiovascular disease. It can be improved with increased exercise and omega 3 fatty acids.

High Triglyceride Levels reflect an increase in the body’s glycosylation caused by high sugar fed diets. Triglycerides can also be lowered with high dose omega 3 fatty acids and adapting to a low sugar diet.

Omega 3 fatty acid serum levels are not a good reflection of the true intracellular content and its function. One reason for mixed results in major omega three trials is the use of serum omega 3 levels, which are very transient and unreliable. The only way to know the effectiveness of a supplement is to know the following: 1) The exact dosage of ingestion 2) The amount bioavailable after digestion 3) The effective functional content at the cellular level (intracellular).

**Omega 3/6 RBC content assay** helps measure the true effective intracellular content, which helps guide patients on optimal omega 3 dosing, since it accounts for ingested dose, absorption, and intracellular availability for function.

Refer to these links to learn more about surgical support, cinnamon, and chromium picolinate.

http://www.prutectrx.com/collections/surgical-support


Cholesterol Myth by Steve Sinatra MD
