Challenging Traditional Cardiovascular Risk Assessment

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The Ancestral Health Symposium

Introduction
Cardiovascular risk has been traditionally assessed by measuring cholesterol (i.e., lipoprotein) based on Framingham methodology. We present a modern-day research that properly addresses the root causes, excluding metabolic disease and hormonal dysregulation.

Cholesterol & Cardiovascular Risk

The Muddy Waters of Framingham

In the late 1940s, in the small town of Framingham Massachusetts, scientists began following the life of a population to see who developed heart disease. They measured cholesterol levels, the one that appeared to be associated with bad outcomes and called them "bad cholesterol," smoking, HTN, diabetes and so on. Since the original Framingham work, it has become an accepted practice in the medical field to use such factors to determine risk. A calcium heart scan prove useful.

Pathologist Joseph R. Kolla, MD performed over 16,000 five-hour insulin assays on patients and found glycemic measurement to be the intermediate method. Based on this, Dr. Kolla proposed the following:

- **False Negatives**
- **False Positives**
- **True Positives**
- **Sensitivity**
- **Specificity**

Insulin & Cardiovascular Risk

Hyperinsulinemia alters lipid metabolism unfavorably. Excess energy converted to fat (de novo lipogenesis) leads to the overproduction of triglyceride rich lipoprotein including VLDL, IDL and LDL and circulating free fatty acids. In the hyperinsulinemic state, inflammation and oxidative stress are increased. Insulin resistance and hyperinsulinemia are intimately related. The insulin resistance syndrome (arguably a dominant precursor for heart disease) through many mechanisms including visceral fat accumulation, sympathetic tone, decreasing sodium and water retention, and increasing blood pressure can increase cardiovascular disease risk. 

Consider that insulin is vital to proper conversion of fatty acids to energy, to cell signaling and hormonal dysregulation best describe this. Perhaps the Framingham study is now realized as a complex metabolic disease and the "muddy waters" of Framingham fails to address this.

Insulin Resistance Syndrome

Manifestations include metabolic disease and hormonal dysregulation that leads to insulin resistance and dysregulated carbohydrate metabolism. High fasting blood glucose levels have been shown to be associated with cardiovascular disease.

Calcium sees the Disease - Framingham Guesses

In 1958, it was published that Framingham participants were exposed to the forces of inflammation, oxidative stress, and advanced glycation and can become damaged. Perhaps, the Framingham study's failure to address insulin resistance syndrome explains the implications. To properly address the root causes, measuring cholesterol (stored in lipoproteins) based on Framingham methodology is not sufficient. Insulin isn't measured and diabetes as a contributing factor is understated. Perhaps, cholesterol's presence is a consequence of metabolic disease rather than a cause.

Metabolic Syndrome

Insulin Resistance Syndrome

5 of 5 Criteria for Diagnosis

Cholesterol and triglycerides are not the only factors that should be taken into account when assessing cardiovascular risk. Other factors include high blood pressure, high blood sugar, and excess body weight. These factors, along with a family history of heart disease, can increase the risk of developing heart disease.

The Calcium Heart Scan

Calcium sees the Disease - Framingham Guesses

Calcium Assay

A calcium heart scan is a test that measures calcium in the blood. Calcium is a mineral that is important for many functions in the body, including bone health and cardiovascular health. A calcium heart scan can be used to assess the risk of heart disease by measuring the amount of calcium in the blood.

Recent estimates show that over half or the US population are diabetic and pre-diabetic, an estimate ranging from 29% to 57%. Diabetes Epidemic & You. 2011

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References


Conclusions

- Insulin is an important biomarker for predicting cardiovascular risk.
- The currently recommended approach to assess cardiovascular disease is a cholesterol panel with sodium and cholesterol measures.
- Insulin assays and calcium scores are far more servicable tools for the early assessment of cardiovascular disease.
- Insulin resistance and hyperinsulinemia are important (and often ignored) factors that significantly increase cardiovascular risk.
- Further research is needed to show that lifestyle changes, including LCHF, fail to address hormonal dysregulation and improve cardiovascular outcomes.