Estimation of Triglyceride and cholesterol

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Triglycerides: are a type of blood fat. They are our main source of energy and are essential for good health.

But if you have too much in your blood, this can raise the risk of heart disease. Triglycerides are a combination of:

-three fatty acids (i.e. saturated fat, unsaturated fat or both – these are the building blocks of fats)

-glycerol, a form of glucose (a simple sugar).

Formation of Triglycerides

-Fat and liver cells cooperate to synthesize and store triglycerides.

-The high concentration of triglycerides in the blood correlates with the consumption of starchy and fatty food.

-Triglycerides cannot pass through cell membranes freely. Special enzymes on the walls of blood vessels (lipoprotein lipases) must break down triglycerides into free fatty acids and glycerol.

-When the body requires fatty acids as an energy source (in case of absence of carbohydrate), the hormone glucagon signals the breakdown of triglycerides by hormonal-sensitive lipase to release free fatty acids

Function of Triglyceride:

Triglycerides provide your body with energy between meals. Calories from foods that your body doesn't immediately need are converted into triglycerides and stored in fat cells. When energy is needed between meals, hormones trigger the release of stored triglycerides. If you eat more calories than you burn, however, your triglyceride level may be high.

Causes of hypertriglyceridemia

There are many reasons why your triglyceride level may be high. Some of them are due to lifestyle habits that increase triglyceride levels.

These include:

-Smoking

-Physical inactivity

-Being overweight or obese

-Increased alcohol consumption

-Eating a diet low in protein and high in carbohydrates.

There are also medical conditions that can cause high triglyceride levels, including:

-Cirrhosis in the liver

- Diabetes, especially if it is not well controlled

-Genetic factors: as familial hypertriglyceridemia or combined hyperlipidemia

- Hypothyroidism

-Nephrotic syndrome or kidney disease

- Pancreatitis

-Drugs as corticosteroids and estrogen.

Specimen collection and storage

-Fresh, non-hemolyzed serum from fasting patients is recommended.

-TG test needs 12 hours fasting because its level is effected by meal (fatty meal, high carbohydrates meal).

- Triglycerides in serum appears stable for three days when stored at 2-8 ◦C.

- -Prolonged storage of the samples at room temperature is not recommended since other glycerol containing compounds may hydrolyze, releasing free glycerol with an apparent increase in total triglycerides content.

Normal levels

-(<150)Normal range, low risk

-(150-199)Borderline high

-(200-499) high

-(>500)Very high, high risk

Cholesterol: Total cholesterol is the total amount of cholesterol in your blood. Cholesterol is a waxy substance found in your blood.

Types of cholesterol

There are two main types of cholesterol: low-density lipoprotein (LDL), or "bad" cholesterol, and highdensity lipoprotein (HDL), or "good" cholesterol. A cholesterol test is a blood test that measures the amount of each type of cholesterol and certain fats in your blood.

LDL levels: Also known as the "bad" cholesterol, LDL is the main source of blockages in the arteries.

HDL levels: Considered the "good" cholesterol, HDL helps get rid of "bad" LDL cholesterol.

Total cholesterol: The combined amount of low-density lipoprotein (LDL) cholesterol and high density -lipoprotein (LDL) cholesterol in your blood.

VLDL levels: Very low-density lipoprotein (VLDL) is another type of "bad" cholesterol. Development of plaque on the arteries has been linked to high VLDL levels. It's not easy to measure VLDL, so most of the time these levels are estimated based on triglyceride measurements.

Risk factors for cholesterol:

-High blood pressure

-Type 2 diabetes

-Smoking

-Excess weight or obesity

-Lack of physical activity

-A diet high in saturated fat

Normal Up to 200 mg/dl

Borderline High 200– 239 mg/dl

High >240 mg/dl

How are triglycerides different from cholesterol

Triglycerides are a type of fat in the blood, used for energy.

Cholesterol is a fatty, waxy substance produced by the liver. The body uses cholesterol to build cells and make some vitamins and hormones.

Thank you for listening