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Cholesterol (Hyperlipidaemia)

Introduction

Hyperlipidaemia means raised levels of lipids (fats) in the blood. These are cholesterol and triglycerides. It causes no symptoms but is associated with an increased risk of coronary heart disease (CHD) and this can result in angina (chest pain), a heart attack, or both. Because of these risks, we recommend treatment for people with hyperlipidaemia.

Lipid levels can almost always be lowered with a combination of diet, weight loss, exercise, and medication.

The standard lipid blood tests include a measurement of total cholesterol, LDL cholesterol, HDL cholesterol, the ratio of HDL to LDL and triglycerides.

A raised total cholesterol level is associated with an increased risk of CHD and a desirable total cholesterol level is usually less than 5 mmols/L. A total cholesterol level of 5 to 6 is borderline high, while a value greater than 6 is high. However, most decisions about treatment are based upon the level of LDL or HDL cholesterol, rather than the level of total cholesterol. The total cholesterol can be measured any time of day. You do not have to be fasting before testing.

The low density lipoprotein (LDL) cholesterol ("bad" cholesterol) is a more accurate predictor of CHD than total cholesterol. LDL cholesterol level greater than 4 is a risk for any person and a desirable level is less than 3. The actual risk will depend upon other factors including the HDL level. Also we advise that if other risks are present such as previous heart attack, hypertension, diabetes or a strong Family History of CHD then levels below 2.5 are desirable. The LDL cholesterol should be measured after fasting for 12 to 14 hours.

Raised levels of HDL cholesterol actually lower the risk of CHD and a level greater than 1.5 is a negative risk factor for CHD (i.e. it is protective against heart disease). You do not have to be fasting before testing.

Raised levels of triglycerides are also associated with an increased risk of CHD and desirable levels are below 2.2. Triglycerides should be measured after fasting for 12 to 14 hours.

Treatment

Diet and Exercise

All people with high LDL cholesterol should attempt some changes in their day-to-day habits, including: reducing total and saturated fat in the diet, eating plant stanols and sterols, reducing weight in overweight patients and taking regular aerobic exercise.

Eat a lot of vegetables, fruits, whole grains, and a limited amount of red meat. Get at least five servings a day of fruits and vegetables. More is even better and to achieve this make fruits and vegetables part of every meal. Put fruit on your cereal. Eat vegetables as snacks. Have a bowl of fruit out all the time.

Trans fatty acids and saturated fats should be avoided. Monounsaturated and polyunsaturated fats should be used instead. To accomplish this choose chicken, fish, or beans instead of red meat and cheese. Cook with oils that contain a lot of polyunsaturated and monounsaturated fats, like olive and canola oil. Choose margarines that do not have partially hydrogenated oils (i.e. soft margarines and not hard). Eat fewer commercial baked goods, which usually contain partially hydrogenated fats, and do not eat at fast food restaurants. Nuts and shellfish generally contain high levels of polyunsaturated fats so are acceptable but they are also high Calories sources so beware if you are trying to lose weight.

Eat fruits and vegetables that are rich in folate, like oranges, orange juice, and green leafy vegetables. Avoid excessive alcohol intake.

cont.

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Medications

Numerous medications are now available to help lower elevated levels of LDL cholesterol and triglycerides, but there are few available options for increasing HDL cholesterol. Different medicines target different lipids so your doctor has to help you choose the best for you.

Statins are the most powerful drugs for lowering LDL levels and are the most effective drug for prevention of coronary heart disease, heart attack, stroke, and death. Statins include lovastatin, pravastatin, simvastatin, fluvastatin, atorvastatin, and rosuvastatin. These decrease the body's synthesis of cholesterol and can reduce LDL levels by 20 to 60 percent. In addition, statins can lower triglycerides and slightly raise HDL levels. Statins are thought to decrease the risk of CHD by other mechanisms as well. They are generally well tolerated but have rarely been associated with muscle or liver injury.

Ezetimibe impairs the body's ability to absorb cholesterol from dietary sources as well as cholesterol that the body produces internally. It lowers LDL levels when used alone, and may be combined with a statin to increase the effect. It has few side effects but is not as powerful as the statins and we await trials to confirm its protective effect against CHD.

Bile acid sequestrants include cholestyramine and colestipol. These medications bind (combine with) bile acids in the intestine, interfering with dietary cholesterol absorption. Their use is limited by side effects, including nausea, bloating and cramping and they interact with the actions of some other medications such as digoxin and warfarin, and with the absorption of fat-soluble vitamins (including vitamins A, D, K, and E).

Nicotinic acid is a vitamin that lowers levels of both Triglycerides and LDL cholesterol, and raises HDL cholesterol levels. Side effects include flushing (the most common side effect), itching, nausea, and numbness and tingling. It can also produce low blood pressure in people taking vasodilator medications such as nitro-glycerine, and can sometimes exacerbate angina.

Fibrate medications include gemfibrozil, bezafibrate, ciprofibrate and fenofibrate, which lower triglyceride levels and increase HDL cholesterol levels. They have little effect on the LDL Cholesterol and can also cause muscle toxicity especially when combined with a statin.