Inherited High Cholesterol

(FAMILIAL HYPERCHOLESTEROLEMIA)

Almost 1/3 of the adult Americans have high level of bad cholesterol or LDL cholesterol which doubles the risk of developing cardiovascular disease. Most of these people likely have dozens of different, genetic mutations, each of which raises LDL by a little bit. Overtime, coupled with less than ideal diet, and not enough exercise, their LDL level slowly increases.

About 5% of the population have LDL cholesterol level more than 190 and in them the risk of heart disease is five times higher than people with near optimal LDL level. Inthis group, minority have familial hypercholesteremia or FH which is a genetic condition that affects about one in 250 adults

WHAT IS FH Most people with FH have a mutation or variant in one of the three different genes that provide instructions that help remove excess LDL from the bloodstream. Those people who inherit one variant from a parent have heterozygous FH which can cause LDL level anywhere from 190 to 350 mg/dL . People who inherit 2 variants , that is one from each parent, have homozygous FH.

This is a very rare condition and occurs only about 4 in a million population and it can raise LDL level as high as 1000 mg/dL.

DIAGNOSIS OF FH Diagnosis is based on family history of very high cholesterol or premature cardiovascular disease before the age of 55 in men and before the age of 65 in women. In them, LDL in the blood stream can accumulate on the eye lids, causing small, cholesterol field nodules called XANTHELESMA.

It can also deposit under tendons, especially those along the backs of the hands, the elbows or the back of the ankles. These are called TENDON XANTHOMAS. Accumulations of these deposits around the cornea will produce white ring around the cornea called.CORNEAL ARCUS. But the biggest threat is the buildup of LDL cholesterol in the arteries supplying the heart.

People with untreated FH can sustain heart attack in their 40s or earlier, likely because of the cumulative exposure to high LDL, starting at birth

If a parent or a sibling has very high cholesterol or had a heart attack at a young age, that is before the age of 55 in men or 65 in women, that is a red flag for possible FH. Genetic testing isn't strictly necessary, as high LDL is reliable sign of heart disease risk in anyone, regardless of cause.

However, FH testing can be beneficial for your biological parents, siblings, and children, each of whom have a 50/50 chance of having the same FH variant

Present guidelines, recommend checking cholesterol level in children at least once between the ages of 9 and 11 and again between the ages of 17 and 21.

Complications of FH If untreated, FH can lead to -Early atherosclerosis -Heart attacks and strokes earlier in life -Sudden cardiac death -Aortic stenosis (causing narrowing of the Aortic Valve)-In severe cases, especially with homozygous FH

Treatment of very high LDL The present cholesterol treatment guidelines emphasize the importance of lowering the high LD leveland keeping it low for decades. Whatever the underlying cause may be, treating severe hyper cholesterolemia makes sense. The first choice is a high intensity statin,such as Atorvastatin 40 to 80 mg daily or Rosuvastatin 20 to 40 mg daily.

At these doses, the LDL should come down by at least 50%. In those high risk patients whose LDL remains elevated and not at goal, additional medication may be needed.

These include.: -Ezetimibe(Zetia)-which helps to prevent cholesterol absorption from the gut -Bempedoic acid(Nexletol)-that blocks the cholesterol production in the liver -Alirocumab (Praluent) or Evalocumab (Repatha)- injectable drugs that helps to remove excess LDL from the bloodstream.

These are given twice a month. -Incliseron (Leqvio)- twice yearly injection that interferes with a protein in the liver that regulates LDL

LIPOPROTEIN APHERESIS: This is a procedure which is used to rapidly and significantly lower. The LDL cholesterol level in patient with severe hypercholesterolemia (mainly for patients with Homozygous FH), especially those who do not respond adequately to medications. It is like dialysis for cholesterol.

During the procedure, blood is drawn from the patient and cholesterol is removed from the plasma and the remaining blood is returned to the patient. Unfortunately, it has to be done once every one to two weeks. Effect is temporary and LDL level begins to rise again after the procedure.

This treatment needs to be continued long-term unless some mother effective treatment such as GENE THERAPY is available.

Of course, heart healthy diet, regular exercise, and smoking cessation should also be continued.

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