A Mini-Review on Hyperlipidemia: Common Clinical Problem

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Abstract
Cholesterol is a waxy substance made by the body and also comes from the diet. High cholesterol in body is also commonly known as hyperlipidemia. It is a common problem which may deposit extra fats in the blood. Hyperlipidemia is the leading risk factor for cardiovascular diseases. Cholesterol and triglycerides together make it difficult for blood to pass by narrowing the blood vessels. This review basically focuses on the causes, types, diagnosis, symptoms and treatment of hyperlipidemia. It may be treated by changing life style, eating healthy food, doing exercise but several medications are also available in the market.

Keywords: Hypercholesterolemia; Atherosclerosis; Triglycerides

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Introduction
Human body needs cholesterol which is involved in building the membrane of the cells and hormones like estrogen [1]. Liver is responsible for controlling the content of cholesterol in the blood stream. In the body, liver produces approximately 80% of the cholesterol whereas rest of the cholesterol is obtained from the food like fish, eggs, meat, etc. [2]. After having a meal, cholesterol is digested and absorbed in small intestine then the metabolism and storage occurred in the liver. The cholesterol may be secreted by the liver whenever the requirement of cholesterol is needed by the body [3]. Cholesterol is not present in the food which is derived from the plants [4].

Cholesterol and several other fats together deposit inside the arteries making them narrower by which blood cannot pass easily through it and the pressure may be elevated causing high blood pressure [5]. The deposition of cholesterol may lead to blood clotting and if it breakdown and goes through the blood towards the heart then it may leads to heart attack and if it enters the brain then it may increase the chances of stroke [6]. The main etiology of elevated cholesterol in blood is high intake of several saturated fats [7]. Cholesterol are attached or carried by lipoproteins (lipo=fat) as it cannot travel freely in the blood [8].

Literature Review
Lipoproteins are basically categorized into three types [9]:
- LDL (Low Density Lipoprotein)
- HDL (High Density Lipoprotein)
- VLDL (Very Low Density Lipoprotein)

Low Density Lipoproteins (LDL) is thought to be as the ‘bad’ cholesterol due to higher ratio of cholesterol content to protein and this elevated level may increase the risk of causing heart disease, stroke, etc. [10]. Sometime plaque buildup or deposits along the walls of arteries due to which artery become narrow and the flow of blood decreased in the body [11]. Blood flow may obstruct by plaque rupture as it may cause a clotting of blood which may lead to heart attack or myocardial infarction [12].

High Density Lipoprotein (HDL) may be protective against heart disease, stroke, etc. and thus thought to be “good” cholesterol [13]. The lower level of cholesterol and higher level of protein may leads to HDL. Very Low Density Lipoproteins (VLDL) are associated with plaque deposits and contain even less protein than LDL [14]. Triglycerides are basically those types of fat which involves the low level of HDL and high level of LDL with the elevated level of cholesterol [15]. The blood test determines the total cholesterol score by the sum of HDL, LDL and triglycerides [16]. A high score indicates higher risk of various heart diseases [17,18] (Table 1).

Types of Hyperlipidemia
The main types of hyperlipidemia having different effects on the body are the following [19]:
- Type I: Children are mostly by this type of hyperlipidemia [20]. It may cause infections in pancreas, enlargement of liver and also cause abdominal pain. This is hereditary and also known as LPL deficiency which may destruct the breakdown of fats [21].
- Type II: This is the high level of LDL which may deposits fat around the eyes [22,23].
Type III: This basically affects the level of lipoproteins [24]. The level of LDL is low and HDL is normal [25]. It may cause yellowish grey plaques around the eyes. It increases the early onset of cardiovascular disease [26].

Type IV: The cholesterol level decreased whereas the level of triglycerides elevated which may leads to obesity [27].

These all types of hyperlipidemia may be controlled by diet [28].

Causes

Cholesterol, saturated fat, trans fat in the following food may raise the lipid level in blood:

- Dairy products.
- Ice cream pastries.
- Fried and junk foods.
- Meat etc. [29].

Several other causes of hyperlipidemia

- Obesity.
- Genetic or inheritance.
- Smoking.

References

6. Reynolds risk score.

Diagnosis

Hyperlipidemia may be diagnosed by a regular checkup of LDL, HDL, VLDL and Triglycerides in blood test [35].

Treatment

The following changes in lifestyle may lower the cholesterol level:

- Proper diet.
- Less weight of the body.
- Regular exercise.
- Having non-oily food.
- Eat pears, apples, bananas etc.
- Have fish twice a week.
- Fibrates (fenofibrate), statins may lower the triglyceride levels [36].
- Maximum time the lifelong treatment and medications are required [37].

Conclusion

Hypercholesterolemia or hyperlipidemia should be cured as its elevated level may leads to several harmful diseases like atherosclerosis, cardiovascular, high blood pressure and many other severe problems which seriously affect the human body.


