Lipid abnormalities in obese patient

J. Insira Sarbeen, Dr. Jegadeesan

Saveetha Dental College
Chennai

ABSTRACT:

Aim: To access the prevalence of lipid level in obese patients

Objective: To determine the lipid level - LDL, VLDL, HDL in 50 obese patient

Materials and method: cross sectional study recording the LDL, VLDL, HDL of 50 obese patient in saveetha medical college

Background: The prevalence of lipid abnormalities in children is increasing, primarily in association with the concomitant epidemic of obesity and the metabolic syndrome. Because overweight and associated lipid abnormalities in children have been shown to persist or track into adulthood, the epidemic of increased cardiovascular risk may soon burgeon into an epidemic of premature cardiovascular disease. Although effective population-based strategies are essential and the first priority to reversing this trend, selected individuals with more extreme lipid abnormalities or associated high-risk conditions or risk factors may be identified for whom lifestyle interventions are not sufficiently effective and drug therapy may be of benefit. Drug therapy of high-risk lipid abnormalities, particularly lowering of low-density lipoprotein (LDL) cholesterol levels, has resulted in great advances in the prevention and treatment of atherosclerotic cardiovascular disease in adults. Definitive evidence now indicates that the atherosclerotic disease process begins in childhood and that the rate of progression is greatly increased by lipid abnormalities and their severity.

Keywords: lipid profile, obesity.

INTRODUCTION:

Obesity has become a major worldwide health problem. In every single country in the world, the incidence of obesity is rising continuously and therefore, the associated morbidity, mortality and both medical and economical costs are expected to increase as well. The majority of these complications are related to co-morbid conditions that include coronary artery disease, hypertension, type 2 diabetes mellitus, respiratory disorders and dyslipidemia. Obesity increases cardiovascular risk through risk factors such as increased fasting plasma triglycerides, high LDL cholesterol, low HDL cholesterol, elevated blood glucose and insulin levels and high blood pressure. [1] It is especially alarming that in recent years the increase was most pronounced in children and that it occurs both in developed, but perhaps even more, in developing countries [1]. Visceral obesity leads to insulin resistance in part mediated by adipokines and free fatty acids (FFA). Adipokines such as resistin and retinol-binding protein 4 decrease insulin sensitivity, whereas leptin and adiponectin have the opposite effect. [2] An abnormality in glucose tolerance, insulin response, serum lipid or lipoprotein concentrations, or some combination of these has been reported to occur in 80-96% of patients with coronary heart disease. [3] The typical dyslipidemia of obesity consists of increased triglycerides (TG) and FFA, decreased HDL-C with HDL dysfunction and normal or slightly increased LDL-C with increased small dense LDL. The concentrations of plasma apolipoprotein (apo) B are also often increased, partly due to the hepatic overproduction of apo B containing lipoproteins. The hallmark of dyslipidemia in obesity is elevated fasting and postprandial TG in combination with the preponderance of small dense LDL and low HDL-C. Hypertriglyceridemia may be the major cause of the other lipid abnormalities since it will lead to delayed clearance of the TG-rich lipoproteins and formation of small dense LDL. [4] Obesity is a risk factor for the development of cardiovascular disease, but it appears that most but not all of this effect is accounted for by obesity inducing dyslipidemia, diabetes, hypertension, and a procoagulant state. The greater the increase in BMI the greater the abnormalities in lipid levels. [5] Many obese patients have multiple lipid abnormalities. As discussed in detail above life style changes are the initial therapy. If life style changes are not sufficient in patients with both elevations in LDL and triglycerides (and elevations in non-HDL cholesterol) one approach is to base drug therapy on the triglyceride levels. [6]

MATERIALS AND METHOD:
A cross sectional study recording the LDL, VLDL, HDL of 50 obese patient in saveetha medical college.
RESULTS AND DISCUSSION:

Table 1: Comparison of t-values between males and females. p value less than 0.05 is considered as significant, method = Unpaired student - t test.

<table>
<thead>
<tr>
<th>Category</th>
<th>BMI</th>
<th>Serum cholesterol</th>
<th>Triglycerides</th>
<th>HDL</th>
<th>LDL</th>
</tr>
</thead>
<tbody>
<tr>
<td>obese</td>
<td>1.65</td>
<td>2.58</td>
<td>2.34</td>
<td>0.79</td>
<td>2.40</td>
</tr>
</tbody>
</table>
Table 2: Comparison of lipid profile pattern in four categories, p value less than 0.05 is considered as significant

<table>
<thead>
<tr>
<th>Lipid profile</th>
<th>Obese Mean±SD</th>
<th>P value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Serum cholesterol</td>
<td>233.5±52.37</td>
<td>0.0110*</td>
</tr>
<tr>
<td>Triglycerides</td>
<td>154.6±64.70</td>
<td>0.1177</td>
</tr>
<tr>
<td>HDL</td>
<td>45.5±13.60</td>
<td>0.0001***</td>
</tr>
<tr>
<td>LDL</td>
<td>160.2±57.18</td>
<td>0.0001***</td>
</tr>
</tbody>
</table>

In current study we compare the lipid profile pattern of obese patients. More than half of the overweight and obese patient had increased serum cholesterol and increased LDL-C level and decreased HDL-C levels as compare to normal weight and underweight patients. The first priority in treating lipid disorders in obese patients is to lower the LDL cholesterol levels to goal, unless triglycerides are markedly elevated (> 500-1000mg/dl), which increases the risk of pancreatitis. LDL is the usual first priority because the database linking lowering LDL with reducing cardiovascular disease is extremely strong and we now have the ability to markedly decrease LDL cholesterol levels. Dietary therapy is the initial step but in most patients will not be sufficient to achieve the LDL goals. If patients are willing and able to make major changes in their diet it is possible to achieve remarkable reductions in LDL cholesterol levels but this seldom occurs in clinical practice. Statins are the first choice drugs to lower LDL cholesterol levels and many obese patients will require statin therapy. The fundamental derangement in nonalcoholic fatty liver disease is insulin resistance, a key component of the metabolic syndrome, which includes type 2 diabetes mellitus, hypertriglyceridemia, essential hypertension, low circulating high-density lipoprotein, and obesity. The natural history of fatty liver disease is not always benign, and causality for cirrhosis and chronic liver disease.

CONCLUSION:
This study had provided a baseline data regarding the lipid profiles in obese patient. Treatment plan regarding obesity like proper diet will help in control of lipid profile so that it will not be the root cause for other metabolic disorders like diabetes, hypertension, cardiac diseases, etc.

REFERENCES:
[2]. Treatment of lipid disorders in obesity, Serena Tonstad & Jean-Pierre Després, Pages 1069-1080 | Published online: 10 Jan 2014.


[4]. Insulin Resistance: A Multifaceted Syndrome Responsible for NIDDM, Obesity, Hypertension, Dyslipidemia, and Atherosclerotic Cardiovascular Disease, Ralph A DeFronzo, MD and EleuterioFerrannini, MD, American diabetic association.


[6]. Clozapine, Diabetes Mellitus, Weight Gain, and Lipid Abnormalities: A Five-Year Naturalistic Study, David C. Henderson, M.D., Enrico Caglieri, M.D., Colin Gray, Rima A. Nasrallah, B.S., Doug L. Hayden, M.A., David A. Schoenfeld, Ph.D., and Donald C. Goff, M.D., Published online: June 01, 2000, American journal of psychiatry.