Impact of Lipid Profile Alterations on Disease Progression

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Abstract
Background: A significant risk factor for conditions including coronary artery disease, obesity, and stroke is a person's lipid profile. A more accurate indicator of coronary artery disease than LDL cholesterol is the ratio of total to HDL cholesterol, which is affected by triglycerides and is an excellent indicator of obesity. The best indicator of a stroke is total cholesterol. The goal was to assess the plasma lipid abnormalities in various diseases and to explain how age and sex affected these abnormalities.
Methods: Performed an analysis on 150 individuals, and for this study, 74 patients with aberrant lipid profiles had their data used. Patients who are younger than 50 and older than 50 years old are divided into two groups. Participants in this study had dyslipidemia, obesity, coronary artery disease, and stroke. Clinical history, physical exams, and pertinent laboratory tests were used to diagnose the disease. The diseases and age categories of the cases were used to further categorize them.
Results: 44% of the patients had obesity. According to age and sex, men were more likely to be afflicted by obesity. In 29% of patients, CAD was present. Patients under 50 years old were more severely impacted. Males and females were equally impacted by the sex. 25% of the patients had a stroke. More than 50-year-old patients had strokes, according to age. There are not many differences when it comes to sex.
Conclusion: Mostly patients were affected with Obesity. The main cause of this is less physical activity, food Habits and their life style. They have to do regular physical exercise twice in a day. Secondly, Patients mostly affected from coronary artery disease (CAD). High blood pressure & high cholesterol are the main causes for stroke.

Keywords: CAD, Obesity, HDL, LDL, Total cholesterol, VLDL, Sex, Stroke, dyslipidemia.

I. INTRODUCTION

An excess of bodily weight is referred to as obesity. According to a World Health Organization (WHO) press release, obesity is a chronic condition that is spreading around the world and displacing other conventional health issues (Javed et. al., 2014). In terms of the severity of its detrimental influence on public health, the issue has been referred to as an epidemic and contrasted with the perils of alcohol and tobacco use (WHO, 2000). Children whose parents have cardiovascular conditions tend to grow heavier as children and become obese as adults, which is directly connected to cardiovascular issues (Klatzkin et. al., 2015). Obesity is a chronic condition and a standalone risk factor for a wide range of serious illnesses (Neuhouser, 2019). Globally, the incidence of overweight and both general and central obesity has increased over the past 30 years in both men and women.
Cardiovascular disease (CVD) has been linked to hypercholesterolemia. Similar to how atherosclerotic plaque development has been linked to an increase in non-high density lipoprotein cholesterol (McGill et. al., 2001, Li et. al., 2003). During childhood and adolescence, many CVD risk factors, such as high body mass index (BMI) and aberrant lipid levels, frequently appear (Daniels and Greer, 2008). There is general agreement that obesity significantly increases the risk of developing cardiovascular disease, changes in glucose metabolism, and shortens life span (Eyre et.al., 2004). It is generally recognized that lipids and lipoproteins increase the risk of developing ischemic heart disease. There is evidence that higher triglyceride, cholesterol, and LDL-C levels are risk factors for atherosclerosis.
A stroke is characterized by fast onset symptoms and/or evidence of a focused and generalized loss of brain function that lasts for at least 24 hours and has no other evident etiology than vascular origin (Young et. al., 2007). Higher levels of both total and LDL-C are linked to an increased risk of having an ischemic stroke in the majority of observational studies, although not all of them (Leppälä et. al., 1999).
Dyslipidemia is a metabolic disorder that can cause atherosclerosis, cardiovascular disease (CVD), stroke, and other CVD-related conditions. Increased cholesterol levels continue to be a significant risk factor for total impairment and early mortality (Murray et. al., 2015).

II. MATERIALS & METHODS

The lipid profiles of patients in Punjab have been evaluated. Clinically and biochemically, newly diagnosed patients of both sexes with altered lipid profiles who had been afflicted with certain disorders as a result of the modification in the lipid profile were collected. Patients who are younger than 50 and more than 50 years old are divided into two categories. Participants in this research had dyslipidemia, obesity, coronary artery disease, and stroke. Clinical history, physical exams, and pertinent laboratory tests were

used to diagnose the disease. 150 participants in all were involved in the study, and 74 of them had abnormal lipid profiles. The illnesses and age categories of the cases were used to further categorize them.

Obese patients in Group A are implicated, individuals have coronary artery disease in Group B. Participants in Group C who have suffered a stroke. All samples were taken while subjects were fasting, allowed to clot, and then the blood was separated and measured for total cholesterol, triglycerides, HDL, LDL, and VLDL. For the analysis of various parameters, fully automated analyzers were employed. The patients' medical histories are also examined. The BMI is computed using the individual's history and lipid profile in addition to their height and weight.

III. RESULTS & DISCUSSION

Statically Analyses were performed by using SPSS. Mean values of the findings were compared among and between groups. Results were classified into 2 age groups and 3 groups of diseases for Male and Female.The level of Total Cholesterol, HDL Cholesterol, LDL cholesterol and Triglycerides levelsshows different diseases. In 74 subjects there were 33 subjects who were obese, 19 subjectsof stroke and 22 subjects have coronary artery disease.

In the present study, 74 subjects were taken. The mean and standard deviation of Totalcholesterol in Coronary artery disease is 226.52± 36.98, in obesityis 202.90± 35.92 & instroke is 222.63± 37.25.

The mean and standard deviation of Triglycerides in Coronary artery disease is 198.45± 126.24, in obesity is 274.21± 148.99 & in stroke is 181.36± 58.79.

The mean and standard deviation of HDL cholesterol in Coronary artery disease is 45.04± 10.50, in obesity is 43.69± 11.55 & in stroke is 50.15± 10.11.

The mean and standard deviation of LDL cholesterol in Coronary artery disease is 145.59± 28.53, in obesity is 121.21± 34.78 & in stroke is 145± 31.05.

The mean and standard deviation of VLDL cholesterol in Coronary artery disease is 27.35± 22.24, in obesity is 34.84± 23.31 & in stroke is 27.56± 8.73.

Obesity

	More than 50	Less than 50
Age	14 subjects	19 subjects
Male	9 subjects	13 subjects
Female	5 subjects	6 subjects

In this table shows comparison of Lipid Profile parameters between two age groups in Obesity. There was significant difference among the age groups. Males were more affected by Obesity than female. There is 9 male subject have obesity who were more than age of 50. And 13 male subjects who were less than age of 50. Whereas 5 females who have age more than 50 and 6 females who have age less than 50 were affected with Obesity. Total according to age groups there were 14 subjects who were more than 50, and 19 subjects who have less than 50 years of age have obesity. There were Difference in values because of their life style, food habits and physical activity of subjects.

Coronary Artery Disease

	More than 50	Less than 50
Age	9 subjects	13 subjects
Male	3 subjects	8 subjects
Female	6 subjects	5 subjects

In this table shows comparison of Lipid Profile parameters between two age groups in CAD. There was significant difference among the age groups, but there is no significant difference among the sex groups. Males and Females were equally affected with CAD. There was 3 male subject have CAD who were more than age of 50. And 13 male subjects who were less than age of 50. Whereas 6 females who have age more than 50 and 5 females who have age less than 50 were affected with CAD. Total according to age groups there were 9 subjects who were more than 50, and 13 subjects who have less than 50 years of age have CAD. There were Difference in values because of their life style, food habits and physical activity of subjects.

Stroke

	More than 50	Less than 50
Age	12 subjects	7 subjects
Male	6 subjects	4 subjects
Female	6 subjects	2 subjects

In this table shows comparison of Lipid Profile parameters between two age groups in Stroke. There was significant difference among the age groups, but there is no significant difference among the sex groups. Males and Females were equally affected with

Stroke. There was 6 male subject have Stroke who were more than age of 50. And 4 male subjects who were less than age of 50. Whereas 6 females who have age more than 50 and 2 females who have age less than 50 were affected with Stroke. Total according to age groups there were 12 subjects who were more than 50, and 7 subjects who have less than 50 years of age have Stroke. There were Difference in values because of their life style, food habits and physical activity of subjects.

IV. CONCLUSION

CAD, Stroke & Obesity is the result of multifactorial influences, some are modifiable and others are not. The increase in the prevalence, morbidity and mortality can be strongly attributed to the changes in lifestyle and dietary habits along with the habit of smoking and/ or alcoholism. Diabetes mellitus and hypertension are the major risk factors for CAD, Stroke & Obesity. The prevalence, morbidity and mortality of the disease can be reduced drastically by direct interversion in the form of lifestyle modifications such as increasing physical activity, decreasing intake of oil as well as avoidance of smoking and alcoholism. Glycemic and blood pressure control will reduce the risk of CAD, Stroke & Obesity. Higher intake of natural antioxidants will be a protective factor.

V. REFERENCES

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