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A PROSPECTIVE STUDY OF SERUM LIPIDS PROFILE IN GUWAHATI CITY

Physiology

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ABSTRACT

Progress in lipid modification therapy has resulted in a relative risk reduction of one-third in major vascular events but has not reduced cardiovascular disease mortality significantly. The study was conducted to investigate trend in the changes of lipid profile over a period of 5 years in healthy people of the different age group among. The mean age of the study cohort was 35.6 years. The mean serum cholesterol was 175.1±13.06mg%, HDL-58.35±8.05mg% TG-97.71±13.51mg%, LDL-98.92±19.47mg%. There was a significant increase of serum Cholesterol level, LDL & Triglyceride levels in the study II which was conducted after a gap of 5 years. The HDL cholesterol also showed a decrease across all age groups. There was a strong relationship between healthier lifestyle factors in individuals who maintained inception lipid profile. Individuals who maintained desired lipid profiles had a progressively higher prevalence of lower BMI (<25 kg/m2), moderate physical activity (30 min walking/day), and fruit and vegetable consumptions (5 servings/day).

KEYWORDS

Lipid profile, Non communicable diseases, Coronary Heart Disease

INTRODUCTION

Chronic non-communicable diseases are the largest cause of death in the world. In 2002 cardiovascular disease, cancer and diabetes—caused 29 million deaths worldwide[1].

Lipoprotein lipase (LPL), secreted by the adipocyte, muscle, and macrophage, plays an important role in VLDL fatty acid release, and its subsequent conversion to low-density lipoprotein (LDL). Cholesterol ester-rich LDL, on the other hand, delivers cholesterol to peripheral tissues for steroidogenesis and maintaining cell membrane integrity. Conversely, in the reverse transport system, high-density lipoprotein (HDL) transports excess cholesterol from extrahepatic cells, such as macrophages at the vessel wall, to liver, where it can be recycled or catabolized to bile acid [2]

Disturbances in this system are integral components of life-threatening conditions like insulin-resistant Diabetes (hyperinsulinemic), hypertension and coronary artery disease (CAD)[3].

Currently, our therapy for lipid modification for atherosclerosis treatment and prevention focuses on lowering low-density lipoprotein cholesterol (LDL-C). The Framingham Heart Study in the 1980s demonstrated that the risk of coronary heart disease (CHD) was significantly lower among persons with higher levels of high-density lipoprotein cholesterol (HDL-C) (normal range 40 to 60 mg/dl) [4].

Lipid-lowering treatment directed at LDL-C with standard doses of Statin has resulted in a relative risk reduction of one-third in major vascular events as compared with placebo [5-6-7].

In patients at very high risk for vascular events, intensive lipid-lowering has been shown to be beneficial compared with standard therapy[8-9].

However, despite such notable progress, cardiovascular disease continues to be the leading cause of death and disease worldwide. No population-based study has evaluated the association between the full range of lipid levels in the same environment and health care system in Guwahati city.

This study was conducted to estimate lipid profile in healthy people of different age group in residents of Guwahati and then compare the lipid profile after a gap of more than 5 years in the same community. The results were also considered along with other known risk factors for heart diseases to develop a plan for treatment and follow up protocol.

MATERIAL AND METHODS:

A Prospective community-based Cross-sectional study was conducted amongst the residents Guwahati, Assam, India. The inception year of 2010 was chosen to allow at least 5 years of follow-up on every individual. We excluded individuals who had lived in Guwahati for <2 years prior to the inception date because they may represent temporary residents.

By simple random sampling, 40 healthy volunteers from all over Guwahati who consented to the study and follow up were selected. Venous blood was collected from the subjects under aseptic measures after an overnight fasting. Estimation of lipid profile was done by colorimetric method using commercially available Human kit in semi auto analyzer MICROLAB 300 (Merck).

To construct a cohort of individuals without pre-existing CV disease, we excluded patients who had a history of myocardial infarction, heart failure, stroke, and coronary revascularization (percutaneous coronary intervention or coronary artery bypass graft surgery). Individuals who were long-term nursing home residents were excluded. We also excluded conditions that may reduce life expectancies such as a history of cancer, dementia, peripheral vascular disease, abdominal aortic aneurysm, and venous thrombosis (deep vein thrombosis and pulmonary embolism).

RESULTS

Two-tailed p values <0.05 were considered significant. Analyses were performed with the use of SPSS version 17. The mean age of the study cohort was 35.6 years. The mean serum cholesterol was 175.1±13.06mg%, HDL-58.35±8.05mg% TG-97.71±13.51mg%, LDL-98.92±19.47mg%.

There was a significant increase of serum Cholesterol level, LDL & Triglyceride levels in the study II which was conducted after a gap of 5 years compared to inception study I across all age groups with p values < 0.01. The HDL cholesterol also showed a decrease across all age groups with p-value <0.05.

Figure 1: Serum Cholesterol levels across two study groups

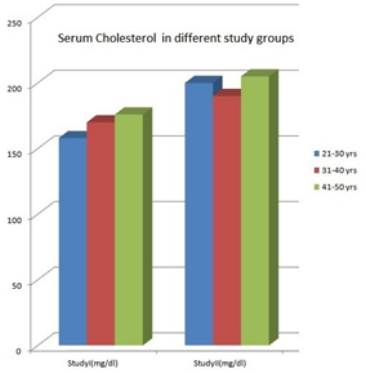


Figure 2: Serum Cholesterol levels across two study groups

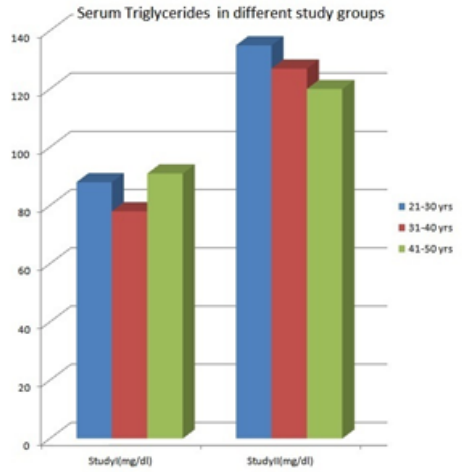


Figure 3: Serum HDL levels across two study groups

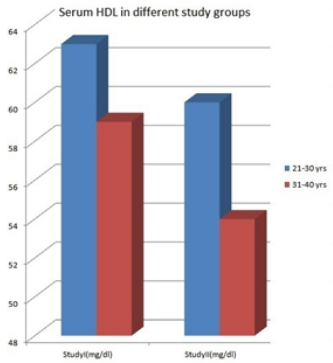
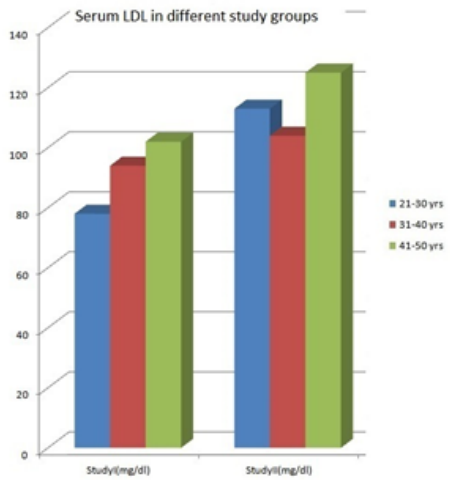


Figure 4: Serum LDL levels across two study groups



There was a strong relationship between healthier lifestyle factors in individuals who maintained inception lipid profile. Individuals who maintained desired lipid profiles had higher prevalence of lower BMI (<25 kg/m2), moderate physical activity (30 min walking/day), and fruit and vegetable consumptions (5 servings/day).

DISCUSSION

Lifestyle changes remain the cornerstone of management of lipid and lipoprotein disorders and obesity. Recommended for individuals with high cholesterol level include adopting a diet of low saturated and trans fats, incorporating food rich in bioactive substances such as fibers, antioxidants, plant sterols, exercise regularly and maintaining a healthy weight.

The emerging studies in the field of lipids metabolism are expected to have a significant impact on the future planning of health strategies.

Periodic screening of individual at risk by clinicians and other health workers using the parameters in this research work is advocated. Parenting skills are the foundation for successful intervention that puts in place gradual, targeted increases in activity and targeted reductions in high-fat, high-calorie foods.

CONCLUSIONS

There are statistically significant changes in lipid profile in between two studies. Social changes in food habits, stress and lifestyle may be a factor for this changes.

Awareness programmes should be initiated among the communities, advice for periodic screening of individuals at risk. Education and promotion of healthy lifestyle are important measures to be deployed by responsible health professionals in preventing the rising trend of Non-Communicable Diseases.

Surveillance and population-based prevention are fundamental to prevent death and to lead a healthy life to progress and perfection.

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