

Section Paediatrics

Original Article

Assessment of Lipid Profile among Children: A Hospital Based Prospective Study

Harish Kumar

Senior Specialist (MD, Pediatrics), Government Medical College, Barmer, Rajasthan, India.

ABSTRACT

Background: Abnormal lipid level in children leads to cardiovascular diseases. There is increase in rate of cardiovascular diseases among children for past few years. There comes the role of diagnosis and treatment. Examination of lipid profile can help to rule out the disease. The aim of the present study was to study lipid profile of children aged between 8 to 16 years. **Methods:** A cross sectional study was planned. A total of 200 patients were included for the study. Blood samples were collected from each patient in fasting state. Samples were further examined for lipid profile estimation. **Results:** 200 students were selected for the present study. Of the 200 children 100 were boys i.e. 50% and 100 were girl's i.e.50%. Total cholesterol for girls was 165.62±30.48 and for boys it was 162.08±30.16. Mean total cholesterol for girls were 94.2±22.80 and for boys were 92.54±21.14. **Conclusions:** lipid profile plays a very important role in good health of children. Examination of lipid profile should be done at an early age.

Key Words: lipid profile, cardiovascular disease, Dyslipidemia, artherosclerosis

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***Address for Correspondence**
 Dr. Harish Kumar
 Senior Specialist (MD, Pediatrics)
 Government Medical College,
 Barmer, Rajasthan, India.

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INTRODUCTION

Coronary artery disease and artherosclerosis is a serious health issue faced all over world. Report of National Cholesterol Education Program showed that 50%of deaths in the industrialized countries of the world are due to Atherosclerosis.^[1] Coronary artery disease is considered to be the major cause of morbidity and mortality throughout the world, accounting for 30% of all deaths in most of the countries.^[2] Hypertension, obesity, smoking, diabetes mellitus, Dyslipidemia, lifestyle are some of the risk factors predisposing to atherosclerosis and CAD.^[3,4] Artherosclerosis begins early in childhood. Some authors have suggested that if risk factors for artherosclerosis can be identified early, with the help of immediate and appropriate treatment it can be prevented.^[4,5] McGill, H.C suggested that

abnormal lipid levels appear early in childhood and result in early atherosclerotic changes.^[6,7] Studies have shown that serum lipids levels are related to gender, race, and age in children and adolescents.^[8] Lipid profile examination can help to detect CAD, artherosclerosis in early stage. However only fewer studies have been reported by authors till date so we aimed to study lipid profile of children aged between 8 to 16 years.

METHODS

A descriptive cross-sectional study was planned in department of Paediatrics, Government Medical College,

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Barmer, Rajasthan, India. In present study a total of 200 patients were included. Patients aged between eight to sixteen years were selected for the study. Both public and private school children were included in the study. Ethical committee clearance was obtained from both ethical committee and school authority. Parents/guardians were explained about the study and the procedure to be performed and a written informed consent was obtained. Children aged between 8 to 16 years and Those willing for the treatment were included and Patients not willing to participate, any mental disorder chronic, illness and who were under medications were excluded from study.

All the patients were examined, and detailed case history was obtained which included dietary history, past medical history. Sample was collected from patients in fasting state. Collected samples were sent to laboratory for estimation of lipid profile. Anthropometric parameters of each patient were recorded.

Data analysis:

Data collected was tabulated and subjected to analysis using Statistical Package for Social Sciences (SPSS) Version 15.0. Non-parametric data has been represented as frequencies and percentages.

RESULTS

200 students were selected for the present study. Of the 200 children 100 were boys i.e. 50% and 100 were girl's i.e.50% (Table 1). Age groups selected for the present study were children aged between 8 to 16 years. Of the 200 children 70 were aged between 8 to 10 years i.e. 35%, 90/200 were aged between 11 to 13 years i.e. 45% and 50/100 were aged between 14 to 16 years i.e. 50% (Table 2). 10.18±2.25 years were the mean age of the patients. The mean weights for the boys were 36.89±12.06 and the girls were 39.56±12.6. Mean height for girls was 144.78±8.82 and for boys it was 142.58±12.75.

Basal metabolic index for girls were 16.81±4.18 and for boys were 18.02±4.73. Total cholesterol for girls was 165.62±30.48 and for boys it was 162.08±30.16. Mean total cholesterol for girls were 94.2±22.80 and for boys were 92.54±21.14. VLDL-C for girls was 19.14±3.88 and for boys were 18.65±4.52. LDL-C for girls was 100.68±24.42 and for boys were 98.32±25.48. HDL-C for girls was 42.99±4.88 and for boys were 40.54±5.28 (Table 3).

Table 1: Demographic details of patients

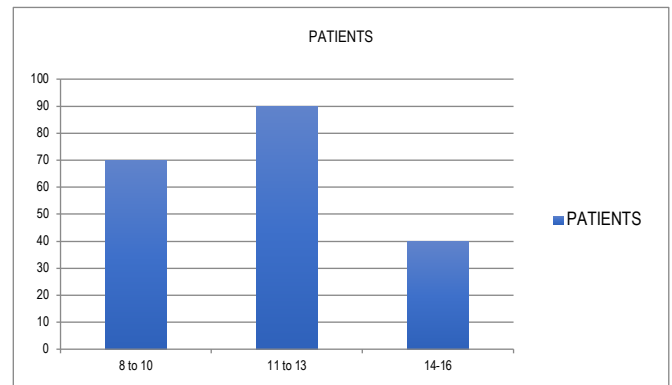
Gender	Patients	Total
Male	100	50%
Female	100	50%

Table 2: Age distribution of patients

AGE	PATIENTS	PERCENTAGE
8-10	70	35%
11-13	90	45%
14-16	40	20%

Table 3: Biochemical characteristics of patients

VARIABLES	GIRLS	BOYS
WEIGHT	39.56±12.6	36.89±12.06
HEIGHT	144.78±8.82	142.58±12.75
BMI	16.81±4.18	18.02±4.73
TC	165.62±30.48	162.08±30.16
TG	94.2±22.80	92.54±21.14
VLDL-C	19.14±3.88	18.65±4.52
LDL-C	100.68±24.42	98.32±25.48
HDL-C	42.99±4.88	40.54±5.28



Graph 1: Age distribution of patients

DISCUSSION

Lipid profile plays a very important role in early diagnosis and detection of coronary artery disease and atherosclerosis. A balance lipid profile helps to maintain good health in children. In present study Total Cholesterol, Triglycerides, Very Low-density lipoprotein cholesterol, Low-density lipoprotein cholesterol and High-density lipoprotein cholesterol were assessed. Naito, H.K. recommended that during childhood, the serum TC and TG levels tend to be lower than during adulthood.^[9] Back GI et al suggested evaluation of cholesterol levels for every child over 10 years old for prevention of atherosclerosis.^[10]

In the present study mean age of the patients were 10.18±2.25 years. The mean weights for the boys were 36.89±12.06 and the girls were 39.56±12.6. In current study total cholesterol for girls was 165.62±30.48 and for boys it was 162.08±30.16. Other studies have shown total Cholesterol of 137.0 ± 20.02 mg/dl and 126.0 ± 22.04 mg/dl in male and female, children of 1–4 years of age, which is lower than those obtained in our study.^[11,12] Amarendra M et al in their study reported that Mean total cholesterol for boys and girls were 161.06±33.14 mg/dl and 164.68±33.53 mg/dl which was similar to our study.

Wajid Ali et al reported Mean TC of 172.8 mg/dl, TG of 66.4 mg/dl, HDL-C of 71.2 mg/dl, LDL-C of 88.9 mg/dl and VLDL-C of 13.3 mg/dl in his study.^[13] In present study VLDL-C for girls was 19.14±3.88 and for boys were 18.65±4.52. LDL-C for girls was 100.68±24.42 and for boys were 98.32±25.48. HDL-C for girls was 42.99±4.88 and for boys were 40.54±5.28. Friedman et al suggested that the sensitivity and specificity of serum lipids for predicting adult lipid and CVD status vary with the age, especially during puberty at which the pediatric lipid determination was

made.^[15] Studies have reported that showed that men are at greater risk of having dangerous low HDL-C levels than women.^[16] In present study HDL-C lever was lower in males than females, we are in agreement with the authors.

CONCLUSION

Within the limitations of present study, we recommend that early estimation of lipid profile among children can help in early diagnosis and treatment of CAD and arthrosclerosis. Imbalance in lipid profile claims for early physician consultation, change in diet and lifestyle. Very few studies are present for the same, further research is warranted. Limitation of our study includes small sample size and short duration of study period.

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