Lipid Profile in High Risk Children Aged 2-10 Years

A case-control study was conducted to study the Lipid profile of high risk children (age 2-10 years). There was a significant elevation of total cholesterol (*P*<0.001) and LDL (*P*<0.001). Early dietary and lifestyle modifications can prevent this cascade.

Key words: *Cholesterol, Coronary Artery Disease (CAD), Hyperlipidemia, Lipid profile.*

Atherosclerosis and coronary artery disease begins early in life and is progressive throughout the life span(1-3). There is an important genetic component to the disease process that produces susceptibility(4). American Academy of Pediatrics (AAP) recommends screening for cholesterol in children as young as 2 years at high risk and aggressive use of cholesterol-lowering drugs as early as 8 years to lower the chances of heart problems later in life(5).

Based on the Western literature and a preliminary Indian study(6), we obtained lipid profile of high-risk children aged 2-10 years. High risk children had parents who had premature CAD (male parent or grandparents <55 years and female parent or grandparents <65 years), diabetes (fasting blood sugar >126mg% or random blood sugar >200mg% or who is on antidiabetic drugs), overweight (body mass index (BMI) of 23-29.9 kg/m^2 or >85th percentile - <95th percentile), obesity (BMI >30kg/m^2 or, >95th percentile) and high blood pressure (systolic blood pressure (SBP) >140 mmHg or diastolic blood pressure (DBP) >90mmHg or SBP and DBP >95th percentile) according to AAP guidelines.

TABLE I LIPID PROFILE IN HIGH-RISK CHILDREN (MEAN ± SD)

	High risk group	Control group	*P* Value
T. Cholesterol(mg%)	165 (39.2)	131 (35.7)	<0.001
LDL (mg%)	85.8 (31.6)	57.7 (24.3)	<0.001
HDL (mg%)	47 (13)	40.6 (11.5)	>0.05
VLDL (mg%)	27.5 (21)	34.9 (24.2)	>0.05
TG's (mg%)	114 (52.5)	133 (72.2)	0.127

A total of 150 children of high risk parents were requested to take part in our study of which 40 parents refused consent and 30 parents refused to provide blood sample of their children. This study was performed in 80 children and compared with age and sex matched normal children. Baseline characteristics were comparable in both groups. Average age of enrolled children was 5.9 years and 6.2 years in cases and control groups, respectively. Sex ratio was similar in both groups. Children were tested for total lipid profile after 12 hours of fasting and after ruling out secondary hypercholesterolemia. Difference between the two groups were compared and tabulated using unpaired student *t* test for continuous variable. *P*<0.05 was considered significant. Chi-square test was used to compare categorical variables. Results are as shown in ***Table* I**. Total serum cholesterol and LDL levels were significantly elevated in high risk children. However, HDL, TG and VLDL levels were not significantly different in two groups. No significant difference was observed in male and female children. Abnormally high cholesterol (>200mg%) and LDL (>130mg%) levels were present in 16 (20%) and 10 (12.5%), respectively in high risk children, and 2 (2.5%) and 1 (1.25%), respectively in control group (P<0.001).

Early diagnosis of hyperlipidemia and hypercholesterolemia is vital. It can encourage dietary and lifestyle modifications in children and adults. Screening for dyslipidemia should be done in high risk children so as to institute preventive measures as early as possible.

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Diagnostic Value of Real Time PCR for Neurotuberculosis

The absolute diagnosis of tuberculosis in children is often difficult and challenging because combination of a typical clinical picture with demonstration of *Mycobacterium tuberculosis* from the secretions and tissues is not possible in majority of children, who have a paucibacillary disease. Real-time PCR methods, based on hybridization of amplified nucleic acids with fluorescent-labelled probes, as evaluated in adults, has shown sensitivity of 71 to 98% and specificity close to 100%(1-3). We conducted this study to compare the diagnostic value of real time technique with conventional PCR technique (IS6110), culture (Bac T/Alert), and biochemical and cytological studies in CSF, for diagnosis of neurotuberculosis in children.

We enrolled 47 children (0-18 years) with neurotuberculosis, between March 2008 to October 2009. Another 8 patients with non tuberculous involvement of the same system were taken as matching disease controls. Inclusion and exclusion criteria were as per IAP guidelines(4). A written informed consent was taken from patients' attendants before the commencement of the study.

After a detailed clinical history and a thorough clinical examination, a complete blood count, tuberculin test, chest radiograph and CSF examination were done in all patients. CT scan of head/USG cranium was done where feasible. After processing , the CSF sample was divided in four parts and they were subjected to cytological and biochemical analysis, culture on Bac T/ALERT 3D system, PCR targeting IS6110 in thermal cyclers (Applied Biosystems) and real time PCR targeting 16SrRNA using light cycler RNA amplification syber green 1 kit (Roche applied biosciences, Germany).

Majority of our cases and controls were less than 4 years of age. The mean age in study and control groups were 4.4 ± 3.5 years and 5.0 ± 4 years, respectively. Mantoux test was positive in 30% (n=14) of cases; all the controls were mantoux negative. 53.1% (n=25) of cases had positive history of contact. 32.7% (n=15) of cases and 75% (n=6) of controls had received BCG vaccination. The mean duration of illness was 37.6 ± 27.4 days in cases and 26.2 ± 20.8 days among controls.

***Table* I** shows the sensitivity and specificity of the four methods. Statistically, real time PCR showed significantly better results than the other tests, including PCR targeting IS6110 (P<0.05).