ABSTRACT

Background:

Atherosclerotic cardiovascular disease is the major cause of death in adulthood and has become a significant problem in our society. Increasing awareness about the origin of the atherosclerosis in early life has renewed interest in determination of various lipid fractions in paediatric age group and it is well documented that atherosclerosis may originate during fetal period. The fetal-origin hypothesis and fetal programming emphasize the profound and sustained impact of factors related to fetal health on the development of chronic disease in adulthood. Several studies suggested that low birth weight and preterm birth linked to abnormalities in cord lipid profile and higher prevalence of atherosclerotic cardiovascular disease. Hence the present study was undertaken to determine normal values of umbilical cord blood lipid profile in the local population and its correlation with birth weight and gender.
Objectives:

(1) To estimate and compare cord lipid profile (total cholesterol [TC], triglyceride [TG], high density lipoprotein [HDL], low density lipoprotein [LDL], very low density lipoprotein [VLDL] in between normal and low birth weight neonates.

(2) To estimate and compare cord lipid profile (total cholesterol [TC], triglyceride [TG], high density lipoprotein [HDL], low density lipoprotein [LDL], very low density lipoprotein [VLDL] and in AGA and SGA neonates.

(3) To estimate and compare cord lipid profile (total cholesterol [TC], triglyceride [TG], high density lipoprotein [HDL], low density lipoprotein [LDL], very low density lipoprotein [VLDL] and in BOY and GIRL neonates.
Method:

After taking written informed consent, cord blood was collected immediately after delivery and sent for the lipid profile analysis by auto analyser. Neonates were examined and relevant anthropometric variables were recorded. They were classified into NORMAL and LOW birth weight neonates, as BOY and GIRL neonates and as AGA and SGA neonates based on AIIMS intrauterine growth charts. Lipid profile was compared between the above groups.

Results:

A total of 100 neonates were studied of which 50 were NORMAL weight neonates and 50 were LOW birth weight neonates. Out of 100, 68 were AGA and 32 were SGA. Out of 100, 48 were BOYS and 52 were GIRLS.

In the present study there was no statistically significant difference between male and female neonates.

Cord lipid profile values were higher in LOW birth weight neonates compared to NORMAL birth weight neonates.

Cord lipid profile values were higher in SGA neonates compared to AGA neonates except for HDL (32.77±09.57), which was lower in SGA neonate.
Cord lipid profiles values in LOW birth weight neonates were – TG (62.9 ± 6.43), TC (95.34 ± 14.82), HDL(24.44 ± 2.16), LDL(67.62 ± 5.42), VLDL (12.7 ± 1.75). Cord lipid profiles values in NORMAL birth weight neonates – TC (93.94 ± 4.35), TG (42.72 ± 5.38), HDL (23.44 ± 2.56), LDL (64.86 ± 4.29), VLDL (7.88 ± 1.3). In Cord lipid profile values total cholesterol and VLDL values were higher in LOW birth weight neonates compared to NORMAL birth weight neonates, which were statistically significant (P<0.005)

Cord lipid profile values in SGA neonates were – TC (96.34±14.82), TG (64.9±8.43), HDL(22.44±3.16), LDL(64.62±5.42) VLDL (8.73±1.75). Cord lipid profile values in AGA neonates were – TC (91.94±4.35), TG (40.72±7.38), HDL (24.44±2.56), LDL (62.86±4.29), VLDL (7.88±1.33). Cord lipid profile values Triglycerides were higher in SGA neonates which were statistically significant (p<0.005) compared to AGA neonates.. HDL level was lower in SGA neonate but statistically not significant.
CONCLUSSION

1. Cord lipid profile value does not have significant correlation with gender.

2. LOW birth weight neonates had significantly higher cord lipid profile compared to NORMAL birth weight neonates.

3. SGA neonates had significantly higher values of Triglycerides compared to AGA neonates.

Keywords: Cord blood lipid profile, Gestational age, Birth weight.