

EFFECT OF MATERNAL LIPID LEVELS ON NEWBORN BIRTH WEIGHT IN JAFFNA DISTRICT

T. Yoganathan¹, V. Arasaratnam², M. Hettiarachchi³ and C. Liyanage³

¹Nuclear Medicine Unit, Faculty of Medicine, University of Jaffna, Sri Lanka; ²Department of Biochemistry, Faculty of Medicine, University of Jaffna, Sri Lanka; ³Nuclear Medicine Unit, Faculty of Medicine, University of Ruhuna, Sri Lanka
Corresponding author: thiruyoganathan@yahoo.co.in

Maternal obesity may be associated with metabolic factors that affect the intrauterine environment, foetal growth and the offspring's long term risk for chronic disease. Among these factors, maternal serum lipid level may be associated with foetal growth. Objective of this study was to estimate the influence of variation in serum lipid levels of pregnant mothers on birth weight (BW) of the newborn. In this study, systematic random sampling technique was used and 420 pregnant mothers were randomly selected in Jaffna District. Maternal fasting (include 12 or 14 hours) blood samples were collected at third trimester of gestation and these serum samples were analyzed for total cholesterol (TC), low density lipoprotein cholesterol (LDL-C), high density lipoprotein cholesterol (HDL-C) and triglycerides (TG) by using a fully automatic biochemical analyzer (Urba XL-200). BW was categorized into Low Birth Weight (LBW) (<2500 g), Normal Birth Weight (NBW) (2500-4500 g) and High Birth Weight (HBW) (>4500 g). Among 420 newborns, 212 were females (50.5 %). Average BW of a newborn was 3027.5 ± 431.6 g and average length of a newborn was 50.9 ± 2.1 cm ranging between 44.0-57.0 cm. The incidence rate of LBW, NBW and HBW were 11.4 (n48), 88.3 (n371) and 0.3% (n1), respectively. Mean values of TC, LDL-C, HDL-C and TG were 259.4 ± 49.8 , 169.0 ± 42.7 , and 79.5 ± 21.2 and 272.0 ± 100.8 mg/dL, respectively. Increased maternal serum TG (with ranging 90.0-594.0 mg/dL) was significantly associated with increased BW of the newborn ($r=0.104$, $p=0.033$). Variation in neonatal BW was slightly associated with HDL-C (with ranging 23.1-165.6 mg/dL) and not associated with TC & LDL-C. All four parameters in lipid profile show significantly greater values in pregnant mothers than in unmarried female reference values. Based on this study, TG level of the pregnant mothers at third trimester was one of the parameters to determine the BW of the newborns. However, the relationship between TC, LDL-C and HDL-C and BW of the newborn were not significantly associated. Further research is recommended on lipid profile of pregnant mothers and BW of the newborns.

Financial assistance given by the Higher Education for Twenty First Century (HETC) project funded by the World Bank (IDA Credit 49190-LK) for this study is acknowledged.

Keywords: Birth weight, Fasting blood, Lipid levels, Maternal, Pregnant mothers