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Anthropometric prediction of insulin-like growth factor-I and its binding protein-1 among Egyptian infants of diabetic mothers

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Background: Diabetes is recognized as a particular threat to pregnant women and their neonates. Maternal concentrations of insulin-like growth factor-I (IGF-I) and its binding protein-1 (IGFBP-1) have influence on fetal growth.

Objective: To estimate the association between the anthropometric measurements; which evaluate intrauterine fetal growth and biochemical growth factors; IGF-I and IGBP-1 among IDMs, in attempt to predict them.

Methods: Cross-sectional study carried out on 69 full term IDMs admitted to neonatal intensive care units, Ain Shams University Hospitals. Clinical examination including anthropometric measurements; birth weight, length, head circumference and mid-arm circumference and placental weight. Laboratory investigations included maternal HbA1c and cord blood IGF-I and IGBP-1. They were classified into three groups: 20 small for gestational age (SGA), 25 appropriate for gestational age (AGA) and 24 large for gestational age (LGA).

Results: Most of SGA neonates were born to mothers with type I diabetes, while most of AGA and LGA were born to mothers with gestational diabetes. According to maternal HbA1c, SGA and LGA neonates were born from metabolically uncontrolled mothers while AGA neonates were born to well-controlled diabetic mothers. Anthropometric measurements had significant positive correlations with IGF-I and negative correlations with IGFBP-1. Three equations were performed to predict IGF-I and IGFBP-1 from body weight, length or head circumference.

Conclusions: Good control of diabetes during pregnancy is essential to improve fetal growth. There is an opposing effect of cord blood IGF-I and IGFBP-1 on anthropometric measurements. IGF-I and IGFBP-1could be predicted from anthropometry.

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