

The effects of serum leptin, ghrelin, adiponectin and resistin levels on early postnatal growth in infants of diabetic mothers

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Background:

The exact mechanisms on early postnatal growth are not fully elucidated, but they involve insulin resistance, fetal hyperleptinemia, hypothalamic changes. The adipose tissue-derived signaling molecules include adipokines such as leptin, adiponectin and resistin. On the other hand, ghrelin is the hunger hormone and an endogenous growth hormone secretagogue. Gestational diabetes mellitus (GDM) is a metabolic problem associated with gestation. Among the long lasting effects of GDM are the high risk of being overweight and obesity and a high tendency toward metabolic syndrome in childhood. Similarly, maternal excess weight and obesity or excessive weight gain during pregnancy are also associated with an increased obesity risk in the offspring.

Objective and hypotheses:

This study aimed to investigate the relation between early postnatal growth and serum insulin, leptin, ghrelin, adiponectin and resistin levels in infants of diabetic mothers during neonatal period.

Method:

The mothers were diagnosed as having gestational diabetes by an oral glucose tolerance test (OGTT) performed between 24-28 gestational weeks. All mothers had gestational diabetes for first time during this pregnancy. All pregnant women were treated with dietary intervention and physical recommendation. Newborns of these mothers were included into the study. The mothers, in whom the OGTT results were normal, and their newborns were accepted in the control group.

Anthropometric measurements and blood samplings for newborns were obtained following the delivery and at the end of the first month. Blood samples for biochemical analysis were taken before feeding.

Results:

Mean HbA1c level between well controlled diabetic and control mothers were not significantly different. There was no significant difference between antropometrical measurements (weight, length, head circumference and mid arm circumference) at the birth. Also, biochemical parameters were similar for two groups ($p > 0.05$). At the end of the first month there was no significant difference both antropometrical measurements and biochemical parameters for two groups ($p > 0.05$). Δ weight gain was not correlated with serum leptin, ghrelin, adiponectin and resistin levels in two groups. Δ weight gain was positively correlated with serum insulin levels at the birth in controls (< 0.05). While there were positive correlations between Δ weight gain and head circumference (< 0.01), mid arm circumference (< 0.01) of first month in infants of diabetic mothers, there was just positive correlation between Δ weight gain and, mid arm circumference (< 0.01) of first month in controls.

Conclusion:

Our results indicates that serum leptin, ghrelin, adiponectin and resistin levels don't affect early postnatal growth both in healthy newborns and in infants of diabetic mothers. In healthy newborns early postnatal weight gain is related to serum insulin at the birth.