Abstract

Introduction: Differences in neonatal insulin sensitivity/resistance markers due to the maternal impaired glucose tolerance (IGT) have not been tested. The Healthy Eating Index (HEI) score has been employed for evaluating pregnancy diet quality. Aims: To study the effect of neonatal insulinemia, maternal IGT and diet HEI score upon insulin sensitivity/resistance at birth. Methods: 176 singleton, normoweight, full-term, Caucasian Spanish neonates, delivered without fetal distress whose mothers were screened for gestational IGT were studied. Quantitative Insulin Sensitivity Check Index (QUICKI) and Homeostatic Model Assessment (HOMA-IR) were calculated. Diet followed during the third month of pregnancy was recorded and the respective HEI score calculated in a sample of 29 mothers. Results: As quartile for cord blood insulin levels increased, glucose, the insulin/cortisol ratio and HOMA-IR (all p < 0.001) and IGF-I (p < 0.01) increased while QUICKI and the glucose/insulin ratio (both p < 0.001) and GH (p < 0.05) decreased. Neonates from IGT mothers had higher insulin, HOMA-IR (both p < 0.01) and insulin/cortisol ratio (p < 0.05) and lower GH, QUICKI (both p < 0.01) and glucose/insulin ratio (p < 0.05) than their normal maternal glucose tolerance (NGT) counterparts. Neonatal insulinemia influences more than IGT on the insulin resistance/sensitivity markers at birth. Mothers of hyperinsulinemic neonates showed lower HEI scores (p < 0.05). Conclusion: A large percentage of full-term normoweight infants with hyperinsulinemia showed altered insulin resistance markers. Their mothers consumed low quality diets. Screening strategies focused on neonatal glycemia and insulinemia together with maternal nutritional assessment and advice during pregnancy should be considered.

Keywords

Biomarkers, HOMA-IR, Newborns, QUICKI, Insulin resistance, Pregnancy diet.