

J Clin Endocrinol Metab. 2007 Oct;92(10):3836-43. Epub 2007 Jul 17. Insulin resistance in Hispanic large-for-gestational-age neonates at birth. Dyer JS, Rosenfeld CR, Rice J, Rice M, Hardin DS.

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CONTENT: Intrauterine exposure to maternal diabetes and large size at birth are known risk factors for the subsequent development of insulin resistance and metabolic syndrome. Although Hispanic youth have been shown to have a high prevalence of metabolic syndrome, it is unknown whether metabolic abnormalities and a predisposition for glucose intolerance are present at birth.

OBJECTIVE: The objective of the study was to determine whether abnormalities in insulin sensitivity exist at or soon after birth in large-for-gestational-age neonates born to Hispanic women with and without gestational diabetes.

DESIGN/PATIENTS/SETTING: Forty-two term Hispanic neonates were enrolled for cross-sectional studies at 24-48 h after birth and included nine large-for-gestational-age neonates delivered of women with gestational diabetes (large-for-gestational-age-IDM), 12 large-for-gestational-age but not IDM neonates, 11 poorly grown (at the fifth to 10th percentile), and 10 appropriate-for-gestational-age neonates. Insulin sensitivity and secretion were measured by shortened fasting iv glucose tolerance test. MAIN OUTCOME

MEASURE: Insulin sensitivity index was measured within 48 h of birth. **RESULTS:** Neonates were studied at 36 +/- 11 h postnatally, and all groups were euglycemic at the time of study. However, insulin sensitivity was significantly lower ($P < 0.05$, ANOVA) in large-for-gestational-age-IDM [3.0 +/- 0.7 (sem) mU/liter.min] and large-for-gestational-age-non-IDM (2.2 +/- 0.4 mU/liter.min) cohorts in comparison with poorly grown (5.0 +/- 0.7 mU/liter.min) and appropriate-for-gestational-age controls (5.4 +/- 0.8 mU/liter.min). Insulin secretion did not differ between groups.

CONCLUSIONS: Reduced insulin sensitivity is present soon after birth in Hispanic large-for-gestational-age neonates born to mothers with and without gestational diabetes, demonstrating the onset of insulin resistance before birth and evidence of altered fetal programming.

Related Links

- Metabolic syndrome in childhood: association with birth weight, maternal obesity, and gestational diabetes mellitus. [Pediatrics. 2005] PMID:15741354
- An observational study comparing 2-hour 75-g oral glucose tolerance with fasting plasma glucose in pregnant women: both poorly predictive of birth weight. [CMAJ. 2003] PMID:12591779
- Glucose tolerance, insulin sensitivity, and insulin secretion in children born small for gestational age. [J Clin Endocrinol Metab. 2002] PMID:12364453
- Premature birth and later insulin resistance. [N Engl J Med. 2004] PMID:15548778
- Use of fetal ultrasound to select metabolic therapy for pregnancies complicated by mild gestational diabetes. [Diabetes Care. 1994] PMID:8026282