

Maternal gestational diabetes mellitus is associated with advanced bone age at peripubertal stage in female offspring: Taiwan birth panel study II

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Abstract

Objective: This study aims to determine the impact of maternal gestational diabetes mellitus (GDM) on peripubertal growth of offspring. **Design:** Population-based prospective cohort study. **Setting:** University Hospital. **Population:** 478 mother-offspring pairs from cohort Taiwan Birth Panel Study II (TBPS II). **Methods:** Maternal GDM status was tested at gestational weeks 24-28 using two-step or one-step oral glucose tolerance test. Offspring received follow-up questionnaire, physical examination, and bone age study at the age of 6 to 8. Associations between maternal GDM and offspring outcomes were analyzed using multiple linear or logistic regression models to adjust for maternal pre-gravid BMI, household income, maternal age at delivery, and maternal menarche age. **Main Outcome Measures:** Offspring bone age, serum sex hormone levels, Tanner stage for breast and testes, and penile length. **Results:** There were 43 (9.0%) children born from mothers with GDM, and 435 (91.0%) in the control group. In girls, there was a more advanced bone age in the GDM group (n=19) than the control group (n=203) after adjusting for potential confounding factors (0.48-year, 95% CI=0.002-0.97-year). For boys, the GDM group (n=24) showed no advancement in the bone age compared with the control group (n=232) (-0.13-year, 95% CI= -0.66-0.40). The serum sex hormone levels and secondary sexual characteristics of children in the GDM group were comparable to those in the control group. **Conclusions:** Girls born from GDM mothers had more advanced bone age at peripubertal stage than the control group. This phenomenon was not observed in boys, nor were other secondary sexual characteristics and serum sex hormone levels.

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