

Prenatal Exposure To Butylbenzyl Phthalate And Early Eczema In Seroatopic Versus Nonatopic Children

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Background and Aims: In a cross-sectional study, butylbenzyl phthalate (BBzP) concentrations in house dust were associated with eczema and rhinitis among children ages 3-8 years. Our aim was to test whether concentrations of monobenzyl phthalate (MBzP), a BBzP biomarker, in maternal urine during pregnancy are associated with allergic symptoms in young children and whether that varies by seroatopy.

Methods: MBzP was measured in a spot urine sample collected in 1999-2006 during the 3rd trimester of pregnancy from n=385 nonsmoking African American and Dominican women residing in New York City. Mothers completed repeat child symptom questionnaires through child age 60 months. Repeat child blood samples through age 84 months were analyzed for cockroach, dust mite, and mouse specific IgE defining seroatopy as ≥ 1 result of ≥ 0.35 IU/ml.

Results: MBzP was detected in >99% of urine samples (geometric mean (IQR), 18.4 (7.9, 41.0) ng/ml). By 24 months, 30% of children reported ever having eczema, with the proportion higher among African-Americans (48%) than Dominicans (20%), $p < 0.001$. In multivariable logistic regression analyses, MBzP urinary concentration was associated positively with the odds of eczema (Odds Ratio 2.02, 95%CI [1.32, 3.09], $p < 0.001$, n=385) for an IQR increase in log MBzP concentration, adjusting for specific gravity, child sex, and ethnicity. Stratified analysis suggests a stronger association for ever-eczema up to 24 months among non-atopics (OR 2.52, 95%CI [1.49, 4.25], $p < 0.001$, n=264) than among atopics (OR 1.28, 95%CI [0.48, 3.41], $p < 0.62$, n=92) for an IQR increase in MBzP. The association between MBzP and child ever-eczema remained significant through child age 60 months.

Conclusions: Prenatal exposure to BBzP may influence the risk of developing eczema in early childhood, especially among nonatopics.

References:

Bornehag C-G, et al. The association between asthma and allergic symptoms in children and phthalates in house dust: a nested case-control study. *Environmental Health Perspectives* 2004;112(14):1393-7.