

Topic: Pesticides and infant neurodevelopment

Title: Adverse Associations of both Prenatal and Postnatal Exposure to Organophosphorous Pesticides with Infant Neurodevelopment in an Agricultural Area of Jiangsu Province, China.

Conclusion: Both prenatal and postnatal OP exposure may adversely affect the neurodevelopment of infants living in the agricultural area.

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Abstract: BACKGROUND: Prenatal exposure to organophosphorous (OP) pesticides has been found to be associated with adverse effects on child neurodevelopment, but evidence on potential effects induced by both prenatal and postnatal OP exposure in infants is limited.

OBJECTIVES: Our aim was to investigate the associations of both prenatal and postnatal OP exposure with birth outcomes and infant neurodevelopment.

METHODS: Exposure to OP in 310 mother-infant pairs was assessed by measuring dimethylphosphate (DM), diethylphosphate (DE) and total dialkylphosphate (DAP) metabolites in urines from both pregnant women and children at 2 years of age. The Gesell Developmental Schedules was administered to examine neurodevelopment of 2-year old children.

RESULTS: Based on the Gesell Developmental Schedules, the proportions of children with developmental delays were less than 6%. Adverse associations between head circumference at birth and prenatal OP exposure were demonstrated. Both prenatal and postnatal OP exposure was significantly associated with increased risk of being developmentally delayed. Specifically, odds ratio (OR) value for prenatal DEs was 9.75 [95% confidence interval (CI): 1.28~73.98] ($p=0.028$) in the adaptive area, while in the social area, OR values for postnatal DEs and DAPs were 9.56 (95% CI: 1.59~57.57) ($p=0.014$) and 12.00 (95% CI: 1.23~117.37) ($p=0.033$), respectively. Adverse associations were observed only in boys but not in girls.

CONCLUSIONS: Both prenatal and postnatal OP exposure may adversely affect the neurodevelopment of infants living in the agricultural area. The present study added to the accumulating evidence on associations of prenatal and postnatal OP exposure with infant neurodevelopment.