Persistent Associations between Maternal Prenatal Exposure to Phthalates on Child IQ at Age 7 Years

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KEY POINTS FROM THIS ARTICLE

1) "Phthalates are a class of high production chemicals widely used as plasticizers and additives in consumer and personal care products."

2) "Exposures to phthalates are ubiquitous."

3) "Many phthalates are endocrine disruptors which may operate through multiple mechanisms including perturbations in thyroid hormone and testosterone levels."

4) "Phthalates may act as anti-androgens and lead to disruption in the normal sexual differentiation of the brain:
- they interfere with estrogen synthesis
- they interfere with thyroid hormone production
- they disrupt brain dopaminergic activity which is linked to inattention and hyperactivity.

5) "Research reports inverse associations between maternal prenatal urinary phthalate metabolite concentrations and mental and motor development in preschoolers."

6) These authors followed-up on 328 mothers and their children by measuring urinary phthalates metabolite levels, and evaluating the children's overall intelligence quotient (IQ) at age 7 years. Urinary concentrations of phthalate metabolites reflect an individual's internal exposure to phthalates.

7) "Child full-scale IQ was inversely associated with prenatal urinary metabolite concentrations of phthalates."

8) Children prenatally exposed to phthalates have significant [6.6 and 7.6 points lower] between reductions in IQ measured at age 7 years.

9) "Our findings suggest adverse associations between prenatal phthalate exposure and cognition that persist into the early school years, with potentially meaningful implications for academic performance."

10) "Maternal prenatal urinary metabolite concentrations measured in late pregnancy are associated with deficits in children's intellectual development at age 7 years. Because phthalate exposures are ubiquitous and concentrations seen here within the range previously observed among general populations, results are of public health significance."

11) "In conclusion, our analysis of the associations between prenatal phthalate exposure and IQ in the early school years showed significant decrements in IQ associated with two specific phthalates. These findings are important to inform policy makers of the potentially harmful effects of this class of chemicals."

COMMENTS FROM DAN MURPHY

I believe that the biggest difference between the practice of chiropractic today v. a hundred years ago is the quantity of environmental toxins our patients are exposed to. The majority of these toxins function as neuroendrocrine disruptors, a as chiropractors we pride ourselves in managing subtle alterations of neurological function.

Apparently both in utero and early life exposure to phthalates are quite bad for babies. Phthalates are found in numerous products that babies are exposed to. See

Article Review 04-09: Baby Care Products:
Possible Sources of Infant Phthalate Exposure

1. Sathyanarayana S (2008) Phthalates and children's health. Curr Probl Pediatr Adolesc Health Care 38: 34–49.

2. Braun JM, Sathyanarayana S, Hauser R (2013) Phthalate exposure and children's health. Current opinion in pediatrics 25: 247–54.

3. Bellinger DC (2013). Prenatal Exposures to Environmental Chemicals and Children's Neurodevelopment: An Update. Saf Health Work 4: 1–11.

5. Whyatt RM, Liu X, Rauh VA, Calafat AM, Just AC, et al. (2012) Maternal prenatal urinary phthalate metabolite concentrations and child mental, psychomotor, and behavioral development at 3 years of age. Environ Health Perspect 120: 290–5.