Prenatal Pesticide Exposure Linked to Lower IQ

Babies whose mothers were exposed to organophosphate pesticides during pregnancy may have lower IQs later in childhood, according to three studies published in Environmental Health Perspectives.1,2,3

In one of the studies, researchers at the University of California Berkeley School of Public Health obtained data from an agricultural community of predominantly Latino farm workers. Exposure to organophosphate pesticides was assessed by measuring urinary dialkyl phosphate metabolites of the pesticides collected during pregnancy and childhood. A total of 329 children underwent cognitive testing at age 7. Overall, increasing maternal concentrations of the metabolites during pregnancy were associated with poorer scores for working memory, processing speed, verbal comprehension, perceptual reasoning, and full-scale IQ. Children with the highest maternal concentrations of dialkyl phosphate metabolites had a mean deficit of seven IQ points. Concentrations measured in the children after they were born, however, were not consistently associated with cognitive scores.

In a second study, researchers at Columbia University’s Mailman School of Public Health in New York examined the markers for exposure to the organophosphate chlorpyrifos in blood samples taken from umbilical cords in 265 inner-city mothers and infants. At age 7, the children’s full-scale IQs were measured using the Wechsler Intelligence Scales for Children. On average, for each 4.61 picograms/grams of increase in exposure, the children’s full-scale IQ declined by 1.4% and their working memory declined by 2.8%.

In the third study, researchers at the Gillings School of Public Health examined biomarkers of organophosphate exposure in 404 mothers and infants, about 80% of whom were black or Hispanic. Urinary organophosphate metabolite levels were measured in the third trimester of pregnancy, and prenatal maternal blood was analyzed for the gene that codes for paraoxonase 1 (PON1), a key enzyme in the metabolism of organophosphates. The children underwent neurodevelopmental assessments at age 12 months, 24 months, and 6 to 9 years. Overall, increasing prenatal concentrations of dialkyl phosphate metabolites were associated with a decrement in mental development, beginning at 12 months and continuing through childhood. This association was strongest in mothers with the PON1 Q192R QQ genotype.

Estrogen Therapy May Lower Breast Cancer Risk

Among postmenopausal women with prior hysterectomy, estrogen-only therapy was associated with a decreased risk of breast cancer, according to a study in the Journal of the American Medical Association.1

Andrea Z. LaCroix, PhD, of University of Washington, Seattle, and colleagues analyzed data from 10,739 postmenopausal women with prior hysterectomies who were enrolled in the Women’s Health Initiative. Participants were randomized to receive 0.625 mg/d of conjugated equine estrogen (CEE) or placebo. Follow-up continued after the planned trial completion date among 7,645 surviving participants (78%).

The postintervention risk (annualized rate) for coronary heart disease among women receiving CEE was 0.64% compared with 0.67% in the placebo group; 0.26% vs 0.34%, respectively, for breast cancer; and 1.47% vs 1.48%, respectively, for total mortality. The risk of stroke was no longer elevated during follow-up and was 0.36% in the CEE group and 0.41% in the placebo group. The risk of deep vein thrombosis was lower at 0.17% vs 0.27%, respectively, and the risk of hip fracture did not differ significantly between the two groups (0.36% vs 0.28%, respectively).

Over the entire follow-up, lower breast cancer incidence in the CEE group persisted and was 0.27% compared with 0.35% in the placebo group. Overall, health outcomes were more favorable for younger women compared with older women for coronary heart disease, total myocardial infarction, colorectal cancer, total mortality, and global index of chronic diseases.

Coronary Artery Bypass Rates Declined Significantly

The number of patients receiving coronary artery bypass graft (CABG) surgery decreased dramatically between 2001 and 2008, according to a study in the Journal of the American Medical Association.1

Researchers at the University of Pennsylvania conducted a study of patients undergoing CABG surgery or percutaneous coronary interventions (PCIs) between 2001 and 2008 in US hospitals in the Healthcare Cost and Utilization Project’s Nationwide Inpatient Sample, which reports inpatient coronary revascularizations. These data were supplemented by Medicare outpatient hospital claims.

A 15% decrease in the annual rate of coronary revascularizations was observed between 2001 to 2002 and 2007 to 2008. The annual CABG surgery rate decreased steadily from 1,742 CABG surgeries per million adults per year in 2001 to 2002 to 1,081 CABG surgeries per million adults per year in 2007 to 2008. There was, however, no significant change in PCI rates. Between 2001 and 2008, the number of hospitals providing CABG surgery increased by 12%, and the number of hospitals providing PCI increased by 26%; the median CABG surgery caseload per hospital decreased by 28%, and the number of CABG surgery hospitals providing fewer than 100 CABG surgeries per year increased from 23 in 2001 to 62 in 2008.

“Our data imply a sizeable shift in cardiovascular clinical practice patterns away from surgical treatment toward percutaneous, catheter-based interventions,” study author Peter W. Groeneveld, MD, MS, said in a news release. “This is concerning given that recent data from a national trial indicated CABG surgery remains the better choice for patients with previously untreated three-vessel or left main coronary artery disease.”

Omega-3s May Be Linked to Risk of Prostate Cancer

High blood levels of the omega-3 docosahexaenoic acid (DHA) may be associated with an increased risk of aggressive prostate cancer, according to a study in the American Journal of Epidemiology.1

Theodore M. Brasky, PhD, of the Fred Hutchinson Cancer Research Center in Seattle, WA, and colleagues obtained data from 3,461 men aged 55 to 84 years who were enrolled in the Prostate Cancer Prevention Trial. Cases (n=1,658) were matched with controls (n=1,803) on age, treatment, and prostate cancer family history. Phospholipid fatty acids were extracted from serum, and concentrations of omega-3s, omega-6s, and trans-fatty acids (TFAs) were expressed as proportions of the total. Logistic regression models were used to estimate odds ratios (ORs) and 95% confidence intervals (CIs) of associations of fatty acids with prostate cancer by grade.

No fatty acids were associated with low-grade prostate cancer risk. Men who had the highest blood levels of DHA, however, had 2.5 times the risk of developing high-grade prostate cancer compared with men who had the lowest blood levels of DHA. Men with the highest blood percentages of trans-fatty acids had about a 50% reduced risk of developing high-grade prostate cancer. Neither of the two types of fatty acids was linked to an increased risk of low-grade prostate cancer. Omega-6 fatty acid was not linked to an increased risk of high- or low-grade prostate cancer.

The study findings are contrary to those expected based on the pro- and anti-inflammatory effects of these fatty acids and suggest a greater complexity of effects of these nutrients in regard to prostate cancer risk, the researchers concluded. “If anyone is wondering whether to change their diet, the answer is no,” Dr. Brasky told the New York Times.2 “You have to weigh the risks, and a man’s risk of dying of heart disease is much greater than his risk for high-grade prostate cancer, which is very rare.”


CDC Says Asthma Rates Are on the Rise

The Centers for Disease Control and Prevention (CDC) has reported an increase in the number of Americans diagnosed with asthma; that number grew by 4.3 million from 2001 to 2009. According to the report, nearly one in 12 people in the United States were diagnosed with asthma in 2009. In addition, asthma costs grew 6%, from about $53 billion in 2002 to about $65 billion in 2007.

From 2001 to 2009, asthma diagnoses increased among all demographic groups, with a higher percentage of children reported having asthma than adults (9.6% vs 7.7% in 2009). Diagnoses were especially high among boys (11.3%). The greatest increase in asthma rates occurred among black children (approximately a 50% increase). Seventeen percent of non-Hispanic black children had asthma in 2009, the highest rate among racial/ethnic groups, the report said.

Annual asthma costs in the United States were $5,300 per person with asthma from 2002 to 2007 in medical expenses. Approximately two in five uninsured and one in nine insured people with asthma could not afford their prescribed medication, according to the report.
The CDC’s recommendations for reducing asthma attacks and costs include improving indoor air quality, teaching patients how to avoid asthma triggers, encouraging clinicians to prescribe inhaled corticosteroids for all patients with persistent asthma, and educating patients on how to manage their symptoms.

“Seventy percent of women who are diagnosed with breast cancer don’t have a family history of breast cancer,” Dr. Plecha said in a news release. “It’s very important that we continue to do all that we can to catch breast cancer in the earliest stages so that we can continue to save lives.”


New Mammogram Guidelines May Have Negative Impact

The US Preventive Services Task Force’s (USPSTF) 2009 guidelines, which do not recommend annual mammograms for women aged 40 to 49 years, may be negatively affecting the number of yearly screenings performed, according to two new studies presented at the 2011 American Roentgen Ray Society Annual Meeting in Chicago.

In one study,1 Lara Hardesty, MD, of the University of Colorado Hospital, Denver, and colleagues conducted a survey of 303 health care providers at her institution. In total, 16.5% of the health care providers responded to the questions, which asked about their practices in recommending mammograms for women in specific age groups.

Before the USPSTF guidelines took effect, 56% of the health care providers surveyed recommended annual screening for women aged 40 to 49 years, 33% recommended screening every 2 years, and 11% recommended no screening. After the guidelines went into effect, 20% recommended annual screening for women aged 40 to 49 years, 18% recommended screening every other year, 8% recommended no screening, and 54% discussed the risk and benefits with patients on a one-to-one basis, a recommendation made by the USPSTF.

Dr. Hardesty and colleagues also compared the numbers of screenings performed in women aged 40 to 49 years and women aged 50 years at 9 months before the USPSTF guidelines and 9 months after. Before the guidelines, screenings occurred in 1,327 patients aged 40 to 49 years and in 4,479 patients aged 50 years and older. After the guidelines, screenings were performed in 1,122 patients aged 40 to 49 years and 4,498 patients aged 50 years and older.

In a second study,2 Donna Plecha, MD, of the University Hospitals at Case Medical Center in Cleveland and colleagues analyzed 524 biopsies performed at her institution. Of those biopsies, 108 cases of cancer were diagnosed; 71 cases occurred in women who were undergoing mammography and 37 cases occurred in women who were not. Furthermore, the cancers detected by mammography were more likely to be found earlier, and the tumors were more likely to be smaller.

Food Addiction, Substance Abuse Have Similar Patterns of Neural Activation

Food addiction may be associated with similar patterns of neural activation as substance abuse, according to a study in the Archives of General Psychiatry.1

The study, conducted by Ashley N. Gearhardt, MS, MPhil, of Yale University in Connecticut, and colleagues, included 48 healthy young women ranging from lean to obese. Participants were first tested with the Yale Food Addiction Scale and then monitored with functional magnetic resonance imaging (fMRI). The main outcome measure was the relation between elevated food addiction scores and blood oxygen level-dependent fMRI activation in response to receipt and anticipated receipt of palatable food (chocolate milkshake).

Food addiction scores correlated with greater activation in the anterior cingulate cortex, medial orbitofrontal cortex, and amygdala in response to anticipated receipt of food. Participants with higher vs lower food addiction scores showed greater activation in the dorsolateral prefrontal cortex and the caudate in response to anticipated food receipt; however, they showed less activation in the lateral orbitofrontal cortex in response to receipt of food.

“Similar patterns of neural activation are implicated in addictive-like eating behavior and substance dependence: elevated activation in reward circuitry in response to food cues and reduced activation of inhibitory regions in response to food intake,” the authors concluded.


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