Phthalate, environmental chemical is linked to higher rates of childhood obesity

June 26 2012

Obese children show greater exposure than nonobese children to a phthalate, a chemical used to soften plastics in some children's toys and many household products, according to a new study, which found that the obesity risk increases according to the level of the chemical found in the bloodstream. The study will be presented Saturday at The Endocrine Society's 94th Annual Meeting in Houston.

The chemical, di-ethylhexyl phthalate (DEHP), is a common type of phthalate, a group of industrial chemicals that are suspected endocrine disruptors, or hormone-altering agents.

In the study, children with the highest DEHP levels had nearly five times the odds of being obese compared with children who had the lowest DEHP levels, study co-author Mi Jung Park, MD, PhD, said.

"Although this study cannot prove causality between childhood obesity and phthalate exposure, it alerts the public to recognize the possible harm and make efforts to reduce this exposure, especially in children," said Park, a pediatric endocrinologist in Seoul, Korea, at Sanggye Paik Hospital and professor at Inje University College of Medicine.

Phthalates are found in some pacifiers, plastic food packages, medical equipment and building materials such as vinyl flooring, and even in nonplastic personal care products, including soap, shampoo and nail polish.

Prior research has shown that phthalates may change gene expression associated with fat metabolism, according to Dr. Park. Because past research suggested a link between concentrations of phthalate metabolites and increased waist size in adults, her group studied a possible connection with childhood obesity.

Dr.Park and colleagues measured serum levels of DEHP in 204 children: 105 obese and 99 healthy-weight youth ages 6 to 13 years. The researchers divided these DEHP measurements into four groups from the lowest detectable level (40.2 nanograms per milliliter, or ng/mL) to the highest (69.7 to 177.1 ng/mL).

They found that the obese children had a significantly higher average DEHP level than did the nonobese controls (107 versus 53.8 ng/mL, respectively). In particular, a high DEHP level correlated with body mass index and percentage of fat mass. This increased risk of obesity with elevation of DEHP levels was independent of factors such as physical activity and daily calorie intake, according to the authors.

"More research in people is needed to determine whether DEHP exposure contributes to childhood obesity," Dr.Park said.

Provided by The Endocrine Society