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Antepartum dental x-rays inhibit fetal growth

► Ionizing radiation inhibits growth in many situations. To determine whether local irradiation to the mother's head and neck affects fetal growth, investigators compared the dental records of 1117 women who delivered low-birth-weight (LBW) infants with the records of 4468 maternal controls; the women were members of the same dental insurance plan.

Investigators found diagnostic dental x-rays to be an independent risk factor for delivery of an LBW infant. After adjustment for all dental procedures, receiving a thyroid radiation dose of greater than 0.4 mGy significantly increased risk for LBW and term LBW (odds ratios, 2.54 and 3.54, respectively). Each cumulative 1-mGy increase in thyroid radiation dose increased the OR by 2.59 for term LBW. More than two thirds of antepartum maternal dental radiography occurred in the first trimester, and exposure during this period was associated with a very high risk for LBW (OR, 5.49).

Comment ► Women should not have diagnostic dental x-rays during pregnancy or while trying to conceive. The risk for delivering a term LBW infant after undergoing first-trimester dental radiography is striking. As the authors point out, these data were obtained from an affluent, homogeneous, insured population that may not be representative of other populations. Nonetheless, if these findings are broadly applicable, elimination of dental diagnostic x-rays during pregnancy might reduce the prevalence of term LBW in the U.S. by as much as 5%.

F. Bruder Stapleton, MD
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▲ Hujuel PP *et al.* Antepartum dental radiography and infant low birth weight. *JAMA* 2004;291:1987-93.

Take the fizz out of children's lives

► Much has been written about children's nutrition habits—especially their consumption of carbonated drinks sweetened with sugar—and the current epidemic of childhood obesity. To determine the effectiveness of a school-based educational program in reducing children's consumption of carbonated drinks and preventing subsequent weight gain, researchers randomized 644 children (age range, 7-11 years) to three 1-hour, school-based educational sessions (intervention group) or to a control group. At baseline and at trial's end (i.e., 1 year), all children were asked to keep diaries of drinks consumed over a 3-day period.

When the researchers compared the children's reports of their baseline and end-of-trial consumption of carbonated drinks, the intervention group had decreased consumption by 0.6 glasses over the 3 days, and the control group had increased consumption by 0.2 glasses. At 1 year, the average percentage of overweight and obese children had increased by 7.5% in the control group and by 0.2% in the intervention group.

Comment ► Children are often unaware of the health consequences of consuming sweetened drinks, and in some school settings, healthful drinks are not available. Pediatricians and teachers should be educating parents and children about the deleterious effects of empty calories on general and dental health. In schools where children are tempted by machines full of junk food, pediatricians, parents, and teachers have a responsibility to educate

school administrators and work with them to remove the machines. At the time of publication, the original article was available free of charge.

Elizabeth R. McAnarney, MD
Published in *Journal Watch Pediatrics and Adolescent Medicine*
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▲ James J *et al.* Preventing childhood obesity by reducing consumption of carbonated drinks: cluster randomised controlled trial. *BMJ* 2004;328:1237.

PANDAS: an intriguing hypothesis worth further study

► Nearly a decade ago, researchers at the National Institutes of Mental Health (NIMH) suggested that motor tics and obsessive-compulsive (OC) behavior that appear abruptly in children between 3 and 12 years of age are sequelae of acute group-A β -hemolytic streptococcus (GABHS) infection. They proposed a process of molecular mimicry in the condition known as PANDAS (pediatric autoimmune neuropsychiatric disorders associated with streptococcal infection) by which streptococcal antibodies cross-react with specific areas of the brain (e.g., the basal ganglia) to produce tics and OC behaviors.

Kurlan and Kaplan analyzed the five criteria for the clinical diagnosis of PANDAS established by the NIMH and conclude that the condition is a "yet-unproved hypothesis." They point out that (1) controlled studies have not adequately defined symptom severity; (2) criteria for age at onset do not distinguish PANDAS from Tourette syndrome; (3) parental report of the time of onset of clinical symptoms (an important diagnostic criterion) is often unreliable; (4) onset or exacerbation of symptoms related to streptococcal infection has not been established; and (5) patients with associated mild choreiform movements may have Sydenham chorea.

Swedo and colleagues, who first described PANDAS, argue that, in prepubertal children who meet the criteria for PANDAS, tics and OC behavior are GABHS sequelae. They propose a pathogenic interaction among group-A streptococcal bacteria, host susceptibility (genetic and developmental), and abnormal immune response.

Comment ► When a physician from Australia discovered the association between *Helicobacter pylori* and peptic ulcer disease, it occurred to me that an infectious etiology might be discovered for behavior disorders as well. The PANDAS story is intriguing but needs more research. For now, clinicians should cautiously interpret the abrupt onset of tics and OC behaviors in young children. Swedo and colleagues think it reasonable—in children with abrupt onset or exacerbation of OC disorder or tic disorder—to obtain a throat culture for GABHS, test for streptococcal antibodies (anti-DNase B is the most sensitive test), and treat patients showing recent streptococcal infection. There is no evidence that prophylactic penicillin prevents subsequent streptococcal infections or neuropsychiatric symptoms in these children.

Martin T. Stein, MD
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▲ Kurlan R and Kaplan EL. The pediatric autoimmune neuropsychiatric disorders associated with streptococcal infection (PANDAS) etiology for tics and obsessive-compulsive symptoms: Hypothesis or entity? Practical considerations for the clinician. *Pediatrics* 2004;113:883-6.

▲ Swedo SE *et al.* The pediatric autoimmune neuropsychiatric disorders associated with streptococcal infection (PANDAS) subgroup: separating fact from fiction. *Pediatrics* 2004;113:907-11.

The consequences of obesity ► The epidemic of obesity impels us to better understand the relation between weight and the metabolic syndrome (MS) in children and adolescents. The MS is characterized in children by the presence of three or more of the following measures relative to norms for age: BMI >97th percentile; triglyceride level >95th percentile; HDL <5th percentile; blood pressure >95th percentile; and impaired glucose intolerance. Investigators at Yale University studied the prevalence of the MS in 195 severely obese (mean BMI, 40.6), 244 moderately obese (mean BMI, 33.4), 31 overweight (mean BMI, 24.5), and 20 nonobese (mean BMI, 18.4) young people (age range, 4 to 20 years).

Prevalence of the MS correlated with the degree of overweight. For example, the prevalence of the MS was 38.7% in the moderately obese and 49.7% in the severely obese subjects. In adjusted analyses, white children had a higher risk for the MS than either black or Hispanic children.

Comment ► These data are not surprising: There is a “dose-response-like” relation between extent of obesity and adverse metabolic outcomes. Where does this leave us? First, clinicians caring for obese children must recognize their patients’ risk for the MS and become familiar with its diagnosis. Second, I suspect that increasing numbers of severely obese adolescents will undergo surgery, and the less obese will need to enter weight-reduction programs. Finally, primary prevention for younger children will be critical if we are to shift the weight curve back to the left.

Howard Bauchner, MD
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▲ Weiss R *et al.* Obesity and the metabolic syndrome in children and adolescents. *N Engl J Med* 2004;**350**:2362–74.

Which patients with type 1 diabetes are at risk for microalbuminuria? ► Many adult diseases have their antecedents in childhood conditions. In this prospective observational study, investigators followed 277 patients, newly diagnosed with type 1 diabetes between 1979 and 1984 (mean age, 27 years), for a median of 18 years.

Of this cohort, 79 patients (29%) developed persistent microalbuminuria and 27 (10%) progressed to persistent macroalbuminuria. The cumulative incidences of persistent microalbuminuria and persistent macroalbuminuria were 33.6% and 14.6%, respectively. Significant predictors of microalbuminuria included male sex, a 10-fold increase in urinary albumin excretion, a 1% increase in hemoglobin A_{1c}, and a 10-mm Hg increase in mean arterial blood pressure.

Comment ► We should be concerned about the complications of chronic diseases like type 1 diabetes. Boys and children with high blood pressure are at particular risk for microalbuminuria. Arterial hypertension is critical in the development of diabetic renal disease, and glycemic control is essential to optimal renal function. Pediatricians need watch for the early appearance of renal disease in diabetics, and they must closely follow patients—especially males—who have had evidence of microalbuminuria and hypertension. In particular, we need to manage BP aggressively to ensure that it is well within the normal range in all diabetic children.

Elizabeth R. McAnarney, MD
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▲ Hovind P *et al.* Predictors for the development of microalbuminuria and macroalbuminuria in patients with type 1 diabetes: inception cohort study. *BMJ* 2004;**328**:1105.