

Vitamin D Deficit Raises Risk of Nutritional Rickets

BY PATRICE WENDLING
Chicago Bureau

NEW ORLEANS — Nutritional rickets caused by vitamin D deficiency persists, in part because the risk factors may not be fully appreciated, Dr. Arlette Soros and colleagues reported in a poster at the Southern regional meeting of the American Federation for Medical Research.

The authors have encountered nearly a dozen cases in the last decade at Children's Hospital in New Orleans, and have documented four representative cases. The children, aged 3 months to 3 years, shared similar risk factors of limited sun exposure, darker skin pigmentation, and having been breast-fed without any vitamin D supplementation.

Breast milk typically contains a vitamin D concentration of 25 IU or less per liter, which falls far short of the daily recommended minimum intake of 200 IU per day for infants, said Dr. Soros, a pediatrician with the division of endocrinology at

Louisiana State University, New Orleans.

"It's wrong to think that a baby will get all the nutrients it needs from breast milk, and not give vitamin D supplementation" she said in an interview. "They may appear healthy, but there is a deficiency going on."

In addition, synthesis of vitamin D from ultraviolet sunlight is decreased in darker skin pigmentation. Lifestyle and cultural factors may further limit sunlight exposure.

Three of the children were African American and one was Arabic. They presented with tetany, bony deformities such as bowed legs, widening of wrists and ankles, and rachitic rosary.

All of the children had low serum total calcium (range 6.1-7.8 mg/dL) and ionized calcium levels (range 2.2- 4.3 mg/dL); relatively low normal serum phosphorus levels (range 4.3-6.1 mg/dL), and elevated alkaline phosphatase levels (range 391-1,158 U/L).

All had low serum 25-hydroxy vitamin D (range 5.0-21 ng/mL), high parathyroid hormone levels (range 143-454 pg/mL),

and relatively high 1,25-dihydroxy vitamin D levels (range 93-195 pg/mL). Renal and liver functions were normal.

One boy had even been put in a soft cast because his pediatrician misdiagnosed the rickets as a sprain. After a single dose of intravenous calcium, ergocalciferol, or calcitriol, all of the children had complete or near-complete resolution of their symptoms. "He was up running the next day," Dr. Soros said. "This is very preventable."

In 2003, the American Academy of Pediatrics published new guidelines for vitamin D intake and recommended supplementation of 200 IU for all breast-fed infants. It also has issued directives that infants younger than 6 months should be kept out of direct sunlight.

For the most part, the problem of nutritional rickets has been well identified, although pediatricians are responsible for tolerating lower levels of vitamin D, particularly in African American, Arabic, and Hispanic children, senior author Dr. Alfonso Vargas, professor of pediatrics at



The fraying and lack of calcification seen in this x-ray are typical of rickets.

Louisiana State, said in an interview.

"The message from the AAP is not collating quickly enough," he said. "The beauty of this study shows that if a child's vitamin D needs are not addressed, they will be in serious trouble quite quickly." ■

Type 1, Type 2 Diabetes in Children Hard to Distinguish

BY MARY ELLEN SCHNEIDER
New York Bureau

NEW YORK — Distinguishing between type 1 and type 2 diabetes can be difficult given the increase in the number of overweight and obese children, Dr. Larry C. Deeb said at the annual meeting of the Diabetes in Pregnancy Study Group of North America.

"It is not crystal clear," he said.

The rising number of overweight and obese children in the United States means that more and more children are getting type 2 diabetes, but more children with type 1 diabetes also are overweight.

The classic picture of a child who is wasting away is frequently not the case in type 1 diabetes anymore. In fact, up to a quarter of children with type 1



diabetes might be overweight, said Dr. Deeb, president of medicine and science for the American Diabetes Association and medical director of the Diabetes Center at Tallahassee Memorial Hospital in Florida.

However, there are differences in presentation of illness that can help physicians distinguish between the two conditions.

Type 1 diabetes in children continues to be characterized by a short course of illness, Dr. Deeb said. About 35%-40% of subjects will have ketoacidosis. In children with type 1 diabetes, the C-peptide and insulin levels will decrease, but they might be preserved early on.

In some cases, family history can be a clue. About 5% of subjects have first- or second-degree relatives with type 1 diabetes.

Race and ethnicity also can help physicians figure out whether the diabetes is type 1 or

type 2. Type 1 diabetes is still a disease mostly of whites and northern Europeans in the United States, he said.

When dealing with type 2 diabetes, overweight is a significant factor. About 85% of subjects with type 2 diabetes will be overweight.

In general, the course of type 2 diabetes in children will be indolent. But a significant proportion, about 33% of subjects, will have ketonuria. And a surprising number, 5%-25%, have mild ketoacidosis, Dr. Deeb said.

Many children and adolescents at highest risk for type 2 diabetes are not being seen by a physician, Dr. Deeb said. "You have some parents who bring children in, but the vast majority is not seen," he said. "This teen group is at risk to develop diabetes, and by the time they're at risk, they're not being seen. Therefore, they very well be may be all the way to sick."

In children with type 2 diabetes, C-peptide and insulin levels might increase, but they can be low at diagnosis with glucotoxicity and lipotoxicity.

Type 2 diabetes also is associated with insulin resistance, hypertension, dyslipidemia, polycystic ovary syndrome (PCOS), and acanthosis nigricans. "I never dreamed that I would treat so much PCOS as a pediatric endocrinologist," Dr. Deeb said.

Family history can be a strong indicator of type 2 diabetes. Between 74% and 100% of these children will have a first- or second-degree relative with type 2 diabetes. In terms of race and ethnicity, type 2 diabetes is predominantly a disease of minority youth, but white children still have it, he said. ■

Outpatient-Managed Low-Carb Diet Found Effective in Adolescents

BY DEBRA L. BECK
Contributing Writer

TORONTO — Overweight teens assigned to a 6-month low-carbohydrate diet experienced significant weight loss, decreased body mass index, and improved self-esteem while being managed in an office-based setting, Dr. Robert Siegel reported at the annual meeting of the Pediatric Academic Societies.

"The question we asked is can a low-carbohydrate diet be practically implemented in the office setting," said Dr. Siegel of Cincinnati Children's Hospital. Dr. Siegel also is the medical director of the Cincinnati Pediatric Research Group (CPRG), a network of 47 practice-based pediatricians in the Cincinnati area committed to translating research into practice.

Interestingly enough, fat intake by self-report did not significantly increase in these subjects. Increased fat intake is a concern with low-carbohydrate diets, he said.

A total of 63 healthy children 12-18 years of age and with a body mass index (BMI) greater than the 95th percentile for age were put on a low-carb diet (LCD) of less than 50 g of carbohydrate daily. Subjects were seen regularly by a dietitian and counseled on good nutrition and physical activity along with specific LCD recommendations.

A total of 38 teens (60%) finished the

6-month study. The mean age of the study group was 15 years; 79% were female. Twenty-two percent were African American, 74% were white, and the ethnicity of the rest was unspecified.

Overall caloric intake and carbohydrate intake both dropped significantly during the 6-month study period. At baseline, average carbohydrate intake was 324 g daily and dropped precipitously to 62 g/day at 6 months.

Fat and protein intake did not, however, differ significantly between baseline and 6 months.

Overall caloric intake and carbohydrate intake both dropped significantly during the study.

DR. SIEGEL

Average body weight dropped from 93.4 kg to 88.3 kg, BMI fell from 34.9 to 32.5, and BMI percentile fell from 98.4 to 97.1. A total of 32 of 38 teens lost at least some weight during the study period; the greatest loss was 23.9 kg of body weight. Average weight loss was 5.1 kg.

There also was a significant improvement in Rosenberg Self Esteem Scale scores, from 16.6 at baseline to 15.0 at 6 months. At study end, 54% of teens felt that the LCD was easier to follow than previously tried diets, and 38% said they planned to remain on the diet beyond 1 year.

"We tried to in our study mirror what goes on in practices," said Dr. Siegel. However, not all practices have access to a dietitian, and the study wasn't randomized.

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