

SUBSPECIALIST CONSULT

The Obese Child With Acanthosis Nigricans

Acanthosis nigricans is one of the most common skin signs of obesity and hyperinsulinism and is a valuable predictor of insulin resistance in obese children. Patients with both obesity and acanthosis nigricans, compared with those with obesity alone, tend to have higher body mass indexes and increased fasting and evening insulin levels.

Early recognition and intervention are crucial to avoid complications of insulin resistance. The general pediatrician is in the best position to perform the initial assessment. Begin with measuring body mass index (BMI). Then evaluate the patient for the associated risk

factors. If you diagnose acanthosis nigricans, screen the patient for associated conditions such as Cushing's syndrome; hypothyroidism; coexisting syndromes (including Prader-Willi, Bardet-Biedl, and leprechaunism); lipodystrophy; or psychiatric disorders including depression or eating disorders.

Children with a BMI under the 85th percentile and no complications can be managed well by their pediatrician. Early intervention is key. Focus on healthful living, increased physical activity, and education of the family regarding associated conditions and the adverse effects that obesity can have on the child's health and quality of life.

The best strategy is to treat the underlying cause of acanthosis nigricans. Address obesity and any secondary insulin resistance because obesity is the No. 1 cause of acanthosis nigricans. Although topical keratolytic lotions or other topical therapies may be of some

benefit, results are often disappointing.

It is also important to involve the entire family in the treatment plan. If everyone is not ready for change, success will be limited. Because much embarrassment and stigma are often associated with obesity, discuss treatment, diet, and weight loss in an objective, nonjudgmental, and nonaccusatory fashion. Consider the family's schedule, financial situation, and lifestyle.

Educate patients and family members about appropriate weight for age and height, self-management skills, and a healthy, balanced diet with lower levels of carbohydrates and fats. It is easy for patients and parents to become discouraged, so institute changes gradually.

If a patient presents with obesity and acanthosis nigricans, evaluate the child for other insulin risk factors. These include a BMI above the 85th percentile for age and sex, polycystic ovarian syndrome, hypertension, dyslipidemia, a history of small size for gestational age at birth, premature pubarche, allergic diathesis, and/or a family history of these conditions. Also note that children of certain ethnicities are at higher risk as well, including African, Indian subcontinent, American Indian, and Hispanic populations.

Children with obesity and insulin resistance are at increased future risk for associated complications including orthopedic problems, fatty liver or gallbladder disease, infertility, hyperandrogenism, coronary artery disease and stroke, type 2 diabetes, predisposition to certain cancers, and Alzheimer's disease.

In addition to measurements of blood pressure, height, weight, and BMI, help-

ful laboratory studies include nonfasting lipid, hemoglobin A_{1c}, and insulin and glucose levels. Fasting glucose, insulin, and lipid tests are especially recommended for a child whose BMI is at the 85th percentile or greater.

Conditions that can mimic acanthosis nigricans include postinflammatory hyperpigmentation; chronic eczema (especially in children with darker skin and secondary hyperpigmentation or lichenification); and confluent and reticulated papillomatosis of Gougerot and Carteaud (the plaques in this condition are very similar to acanthosis nigricans, but are more reticulated and located on the chest and back). Other conditions to consider in your differential diagnosis include linear epidermal nevi and retained keratin (which presents as brownish patches on the neck or postauricular areas that are easily removed with alcohol, but not with water).

If the diagnosis of acanthosis nigricans is uncertain, referral to a pediatric dermatologist is recommended. Also refer a girl with suspected PCOS or hyperandrogenism and associated acne, which can be difficult to manage, as well as a girl with male-pattern hair loss.

The following criteria can warrant referral of the patient to a specialist other than a pediatric dermatologist:

- ▶ A child with a BMI at the 85th percentile or greater and any associated complications or any child with a BMI greater than the 95th percentile should be referred to a pediatric obesity treatment specialist, if available.

- ▶ Referral to a pediatric cardiologist may be needed if hypertension or dyslipidemia is present.

- ▶ Referral for a sleep study or for evaluation by a pediatric otolaryngologist

may be indicated if signs of sleep disturbance suggest sleep apnea or obesity hypoventilation syndrome.

- ▶ Persistent headaches could indicate pseudotumor cerebri requiring neurologic evaluation.

- ▶ Referral to an endocrinologist would be indicated if Cushing's syndrome, type 2 diabetes, or hypothyroidism is suspected, or for girls with signs of PCOS or hyperandrogenism. The guidance of a pediatric endocrinologist may be required with certain medications, such as metformin, to decrease insulin resistance and hyperglycemia.

- ▶ Children with knee or hip pain and x-ray findings suggestive of slipped capital femoral epiphysis or Blount's disease (tibia vara) may need orthopedic evaluation.

- ▶ Children with abdominal pain may require referral to a pediatric gastroenterologist for evaluation of obesity-associated liver or gallbladder disease.

Regular monitoring of the overweight child with acanthosis nigricans is recommended. If initial screening is negative for type 2 diabetes or insulin resistance, the American Diabetes Association recommends repeating the screening every 2 years for at-risk children. Follow-up screening can also include thyroid studies to evaluate for hypothyroidism and dehydroepiandrosterone sulfate, free testosterone, and a luteinizing hormone to follicle-stimulating hormone (LH:FSH) ratio to screen for hyperandrogenism. ■

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BY KERRY ROBIN
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Childhood Obesity Rate Rises, but Overweight Levels Off

BY JANE ANDERSON

The percentage of children aged 10-17 years considered overweight remained stable between 2003 and 2007, but the national prevalence of childhood obesity grew significantly in the same time period,

VITALS

Major Finding: The percentage of overweight children held at about 15.5% over the 4-year study period, but the percentage of obese children grew from 14.8% to 16.4%.

Data Source: National Children's Health Study, 2003 and 2007 data.

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according to a study showing nearly one in three children is overweight or obese.

The study also found marked disparities between the rates of overweight and obesity associated with socioeconomic status, school outcomes, neighborhoods, health insurance coverage, and quality of care,

according to study author Christina Bethell, Ph.D., director of the Child and Adolescent Health Measurement Initiative at Oregon Health and Science University in Portland, and her associates.

"Tremendous variation and disparities across and within states and population subgroups demonstrate why we need both targeted, local interventions and broad statewide and national policies across many sectors, including education, transportation, parks and recreation, and health care," Dr. Bethell said in a statement.

Dr. Bethell and her colleagues compared 2007 data from the National Survey of Children's Health with data from 2003. They found that the percentage of overweight children, defined as a body mass index (BMI) in the 85th-94th percentiles for age and sex, held at about 15.5% over the 4-year study period. But the number of obese children, defined as a BMI in the 95th percentile or higher, grew from 14.8% to 16.4% over the same period (Health Aff. [Millwood] 2010;29:347-56).

State statistics varied widely, the study found. In 2007, Utah and Minnesota had the lowest rate of overweight and obesity (23%), while Mississippi had the highest (44%). In addition, publicly insured children were at higher risk for overweight and obesity. Between 2003

and 2007, the combined overweight-obese rate rose from 39.6% to 43.2% for children covered by public insurance programs, while privately insured children saw a much smaller increase, from 26.7% to 27.3%.

Children living in poverty were more likely to be overweight or obese, as were children who live in unsafe neighborhoods, neighborhoods without a park or recreation center, or poorly kept neighborhoods.

The study also found that school outcomes were worse for overweight and obese children. These children had significantly greater odds of not being engaged in school, repeating a grade, or missing more than 2 weeks of school in a year.

In an accompanying editorial, Dr. Thomas R. Frieden, director of the Centers for Disease Control and Prevention, and two colleagues outlined a framework for action on childhood obesity that addresses socioeconomic factors such as poverty and education.

Fixing problems endemic to poverty often requires broad societal change, Dr. Frieden and his colleagues said. They noted that addressing problems that contribute to childhood obesity, such as unhealthy foods in the schools and the lack of safe neighborhood places for physical activity, will be necessary to impact obesity rates. ■