



Pediatric Clips

Narcolepsy in a five-year-old boy with obesity — Daniel L. Preud'Homme, MD, CNS

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Pediatric Clips from The Children's Medical Center are quick reviews of common pediatric conditions.

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CASE PRESENTATION

Andy presented to an outside hospital ER with lethargy. He was sent to the ER by his school because of loss of consciousness and perioral cyanosis.

During the previous few months, Andy's mother noticed a large weight gain. Andy was waking at night to raid the refrigerator. Andy was evaluated in the ER and diagnosed with a viral syndrome. His mother indicates that he has nasal voice, is very short of breath with minimal walking and falls asleep during the day. During these episodes of falling asleep at school, he sustained minimal bruising on his leg, arms and forehead. He also was incontinent. His family history indicates hypertension,

obesity and possible diabetes and coronary heart disease.

On admission to Children's ER, Andy was somnolent and unresponsive. His vital signs were remarkable for a blood pressure of 126/80. His bicarbonate was 39 mEq/l, his CO₂ was 58, his weight was 62 kg, his height was 123 cm and his BMI was 40 (NL<22 for age). His physical examination displayed some acanthosis nigricans, tonsillar hypertrophy, central obesity and normal size genitalia. Further evaluation revealed normal thyroid testing, normal lipid profile, mild increase in fasting insulin level, NL cortisol, and normal CT scan of the head. His cardiac echocardiogram and EKG were normal (no RVH or LVH).

His sleep study indicated severe life-threatening obstructive sleep apnea (OSA), hypoxemia and hypercarbia. After a short stay in the PICU, Andy was stabilized and admitted to the inpatient weight management program at Children's. He started on a diet and exercise management program designed to help him lose weight rapidly and reverse his life-threatening OSA. Andy lost 8.2 kg in 24 days, underwent a T&A (with no complications) and was sent home on Continuous Positive Airway Pressure (CPAP). Further weight loss with the outpatient program allowed him to be free of CPAP within four weeks of discharge.

RESPONSE

Obesity is a medical condition with potential life-threatening complications even at an early age. Up to 14% of children and adolescents were overweight (BMI>95th percentile) in 1999 and these numbers are increasing. Serious complications arise from obesity and have been documented. These include type 2 diabetes, insulin resistance syndrome, asthma, gallbladder disease and sleep apnea. Cardiac concern also exists with increased left ventricular mass, left ventricular hypertrophy and hypertension. Obstructive sleep apnea (OSA) can be related to neurocognitive dysfunction and even hyperactivity disorder. Long term OSA may lead to chronic hypoxemia, pulmonary hyperten-

sion and cardiomegaly (RVH).¹

Recognizing obesity as a cause of these problems is crucial because mortality and morbidity can be prevented or at least minimized with timely effort.

Obesity and rapid weight gain may be serious warning signs of a metabolic or endocrine disease. Hypothyroidism is always thought of first. A normal growth, along with a normal TSH and free T4 will rule out this condition.

Cushing syndrome is very rare. Physical examination of the obese child may show some criteria including acne, central obesity and hirsutism. A morning cortisol will rule it out.

Insulin resistance syndrome may be related to this weight gain.

Once endocrine causes have been ruled out, evaluation for complications is crucial to determine the level of severity, initiate appropriate therapy and establish age-appropriate weight goal.

Complications of obesity may involve insulin resistance, hypertension, OSA, exercise intolerance, scoliosis, lordosis, shortness of breath, hyperandrogenism, amenorrhea, gallbladder disease, liver disease, reactive airway disease, GERD, encopresis, skin rashes and joint pain. Psychosocial complications also are of concern. Obesity can affect school function, cause poor self-esteem, denial, lack of social experiences and result in depression or hyperactivity disorders.

Continued on the reverse side.

Continued from the front.

Evaluation of obesity:

1. Rule out endocrine causes.
2. Evaluate family history: Look for premature cardiovascular death, diabetes, abnormal lipid profile, sleep apnea and hypertension.
3. Ask questions about:
 - a. Sleep history: narcolepsy, nighttime secondary incontinence and sleep apnea
 - b. Endocrine: amenorrhea, polyuria, polyphagia
 - c. Fatigue
 - d. Exercise history
 - e. Diet recall (number of sodas/day, milk/day, dining out/week)
4. Establish a BMI.
5. Consider evaluation with liver panel, CBC, fasting insulin level, lipid profile. Other evaluations such as sleep study, echocardiogram, glucose tolerance test or stress test also may be ordered to define further complications and stratify plan of care.
6. Establish a plan of care: weight stabilization if no comorbidities, weight loss if comorbidities.²

Treatment:

Diet and exercise are the mainstay of therapy. The difficulty is in the details, the execution of the plan and the compliance. Medication and surgery are options although last resort therapies are possible. Community resources are available.

This case illustrates the life-threatening potential complication of obesity in a very young child. Although cardiac complications were not present, OSA was so severe that even BIPAP was not obliterating all life-threatening episodes. Recognition of patients at risk BEFORE complications arise as well as recognition of complication as early as possible may change the outcome for these children⁴.

REFERENCES/ RESOURCES

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Featured specialist



Daniel Preud'Homme, MD, is associate director of gastroenterology and nutrition and director of the lipid clinic at The Children's

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Dr. Preud'Homme received his medical degree from University of Liege in Belgium in 1985 and completed his pediatric residency at the Bellevue Hospital Medical Center New York University in 1990. He completed his pediatric gastroenterology and nutrition fellowship at Columbia Presbyterian Medical Center in New York.

Dr. Preud'Homme is board certified in pediatric gastroenterology and in pediatrics. In February 2002 he received board certification as a nutrition specialist.

Dr. Preud'Homme has assisted with several published books and several community writings and/or services, eight articles and more than 32 abstracts. He presents more than a dozen lectures, seminars or other presentations, annually.



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