

Pediatric endocrinology and obesity



Children'sSM
Healthcare of Atlanta

A physician's quick guide to helping children with obesity

At Children's Physician Group—Endocrinology and Strong4Life, our goals are to diagnose pathological causes of obesity and manage endocrine complications of obesity. This document provides a synopsis of endocrine problems that commonly arise in general pediatric management of obesity.

Etiology of obesity

Short stature or slow growth velocity in a growing obese child is a red flag for a pathological cause. Obesity onset before age 5 is typical in children with a monogenic cause of obesity. However, only 5% of children with early onset obesity have a known genetic case.

Common conditions

Cushing syndrome

This can be difficult to diagnose. Look for features beyond obesity and striae, including short stature, hypertension, proximal limb muscle wasting or weakness, and diabetes. The overnight dexamethasone suppression test is used to evaluate the risk of Cushing syndrome.

- One dose of 15 mcg/kg (max 1 mg) dex po at 11 p.m., and check cortisol the following morning between 7 a.m. and 9 a.m.
- Cortisol should be <2.0 mcg/dL.

Diabetes

- Screen for diabetes every three years in asymptomatic, obese children ages 10 to 19 years old with a family history of Type 2 diabetes, high-risk race or signs of insulin resistance. There is no agreed upon best test (fasting glucose, random glucose, HbA1c).
- Insulin levels do not effectively predict future Type 2 diabetes.
- Apart from lifestyle management, there is no approved therapy for children with prediabetes. Patients with prediabetes that persists after a serious effort to manage lifestyle for greater than six months may benefit from metformin treatment or an endocrine consult.

- A diabetes education consultation or a referral to Strong4Life can be arranged through Children's Healthcare of Atlanta for children with prediabetes.

High LDL cholesterol

- Ensure a fasting sample was obtained.
- Take an average of two samples drawn two to 12 weeks apart when patient is not acutely ill.
- Check for primary disease-causing high LDL cholesterol (i.e., fasting CMP, TSH and urinalysis).
- For moderate elevation (130-189 mg/dL), lifestyle management is recommended for all patients. If no response within six months, evaluate for the following risk factors:
 - Hypertension
 - Smoking
 - Diabetes
 - Nephrotic syndrome
 - Renal failure
 - Renal transplant
 - History of Kawasaki disease
 - HIV
 - Chronic inflammation
 - Cancer survivor
 - Family history of premature cardiovascular disease
- If a high-risk factor is present, the child may benefit from lipid clinic consult.
- If LDL \geq 190 mg/dL, a referral to the lipid clinic is recommended irrespective of risk factors present.

High fasting triglycerides

High triglycerides with low HDL cholesterol is common in obese children. Children with severely low HDL (<20 mg/dL) may benefit from a lipid clinic consult.

- Ensure fasting sample was obtained.
- Take an average of two samples drawn two to 12 weeks apart when patient is not acutely ill.
- Check for primary disease-causing high triglyceride (i.e., fasting CMP, TSH and urinalysis).
- Abnormal levels that are <300 mg/dL may respond to lifestyle management plus or minus fish oil.
- Levels >300 mg/dL may benefit from a lipid clinic consult.

Polycystic ovarian syndrome (PCOS)

Normal variations in adolescents can make a PCOS diagnosis difficult using standard criteria. Minimum requirements for diagnosis include:

- Irregular or absent ovulation
- Clinical signs of high androgens (e.g., hirsute and severe acne)

Differential diagnosis of adrenal disease or an ovarian tumor can be evaluated with minimal investigation.

- 17-hydroxyprogesterone
- Free testosterone
- DHEA-S
- TSH
- Fasting complete metabolic profile
- Fasting lipid profile
- hCG (urine or serum)
- \pm 25 (OH) vitamin D

A combined oral contraceptive pill (OCP) is the first line of therapy. Use OCP with low androgen activity. Consider the risk for thrombosis before starting oral contraceptive. Metformin is used by some, but it is not a Food and Drug Administration (FDA)-approved indication.

Evaluating complications of obesity

Thyroid function testing

- If initial thyroid-stimulating hormone (TSH) is high but <9 uIU/mL, palpate thyroid gland and repeat TSH and Free T4. Get thyroid peroxidase autoantibody (TPO) and antithyroglobulin autoantibodies.
- If there is no goiter, TSH remains minimally elevated and autoantibodies are both negative, TSH should return to normal after weight loss is achieved.
- If there is a goiter present, TSH rises above 9 uIU/mL or either autoantibody is positive, a referral to endocrinology is indicated.

Contact us



Call 404-785-DOCS (5437) to make a referral or for a physician-to-physician consult.



Visit choa.org/md for more information and to access our online referral form.