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Poly cystic ovary syndrome in adolescence associated with obesity

by Robert L. Rosenfield, M.D., FAAP

Poly cystic ovary syndrome (PCOS) is now commonly recognized in adolescence in association with the increased prevalence of obesity. Obesity is a “stress” that unmasks the disorder.

PCOS has been redefined as the result of recent research. Originally termed the Stein-Leventhal syndrome, the association of amenorrhea, hirsutism and obesity, now is recognized as the tip of the iceberg of a much broader spectrum of disorders.

A National Institutes of Health conference redefined the syndrome as otherwise unexplained hyperandrogenic anovulation (menstrual irregularity and infertility) (“NIH criteria,” 1992), and an international reproductive endocrinology workshop recognized a polycystic ovary as an alternative diagnostic criterion to hyperandrogenism and oligo-anovulation (“Rotterdam criteria,” 2004). However, a polycystic ovary in isolation is a normal variant. While obesity is not a necessary feature of PCOS, visceral obesity related to insulin resistance may well prove to be a central feature in the absence of general adiposity.

Why is it important to recognize PCOS in adolescence?

PCOS is a complex trait, much like type 2 diabetes mellitus, and indeed related to it. Strong heritable components of insulin resistance are manifest as adolescent and parental metabolic syndrome (a cluster of critical levels of abdominal obesity, blood pressure, serum triglycerides, HDL cholesterol, and glucose, especially evident as diabetes and central obesity) that interact with environmental components, where obesity again is a major factor. Affected girls are at increased risk for metabolic syndrome. PCOS menstrual irregularity is associated with risks for infertility and endometrial carcinoma. Early diagnosis and management of symptoms and delivery of anticipatory guidance are desirable.

What symptoms should lead to screening for PCOS?

The combination of hirsutism and menstrual irregularity usually is due to PCOS, but the diagnosis should be considered in any of the following scenarios:

- moderate or severe hirsutism, treatment-resistant acne for which Accutane is being considered, or pattern alopecia, in the absence of menstrual irregularity or obesity;
- menstrual irregularity that persists more than two years or severe dysfunctional uterine bleeding, in the absence of hirsutism or obesity;
- intractable obesity, in the absence of skin signs or menstrual irregularity.

How should adolescents be screened?

The diagnosis is on the firmest grounds when hyperandrogenism is documented by a high plasma total or free testosterone. A specialty laboratory that has established a validated assay should perform testosterone determinations for women and children.

The blood sample should be obtained in the early morning, on day 4 to 10 of the menstrual cycle if it is regular.

Who should be referred to an endocrinologist?

The diagnosis requires exclusion of other endocrine disorders that can mimic PCOS. These account for about 10% to 20% of cases of hyperandrogenic anovulation and include disorders such as nonclassic congenital adrenal hyperplasia, hyperprolactinemia, Cushing’s disease, and, rarely, neoplasm. Therefore, an endocrine work-up is indicated if testosterone excess is documented or if symptoms progress or emerge in spite of a normal screening testosterone level.

How should PCOS be managed in adolescents?

Simple, inexpensive treatments may suffice. For mild hirsutism, this consists of cosmetic measures such as bleaching, shaving and waxing. For menstrual irregularity, this may involve cyclic progestin therapy, such as medroxyprogesterone every three weeks (for dysfunctional uterine bleeding) to every other month (for amenorrhea). Diet and exercise counseling are the cornerstone of therapy for obesity.

Eflornithine hydrochloride cream or laser therapies are local dermatologic measures that are effective for small areas of hirsutism. However, health insurance typically does not cover them.

First-line endocrine treatment for hirsutism or menstrual irregularity that cannot be controlled satisfactorily by simple measures ordinarily consists of oral contraceptive combination pills (OCPs), particularly those that contain a non-androgenic or anti-androgenic progestin. The addition of high-dose spironolactone as an anti-androgen may be helpful in moderate or severe hirsutism that is not controlled by OCPs alone. Metformin, in conjunction with behavior modification, may help ameliorate the glucose and lipid complications of obesity and assist in appetite control. It is reasonable for an endocrinologist to supervise these treatments.

Anticipatory guidance includes informing these girls that infertility is not absolute. They need to use ordinary contraceptive practices. The fertility rate ultimately is satisfactory, although reproductive endocrine treatments may be needed.

These girls also need counseling about their propensity to obesity and its complications, particularly diabetes. In addition, immediate family members should be referred for screening for diabetes and other aspects of metabolic syndrome. Sisters are at about 25% risk of developing PCOS.

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