Adolescent Female With Suspected PCOS

Suggestive history and physical findings	Initial laboratory and/or radiologic work-up can include:	When to refer	Items useful for consultation	Additional information
Symptoms/Signs: Signs of Hyperandrogenism: Irregular menstrual periods, hirsutism, acne, frontal and temporal balding, hoarseness of voice, clitoromegaly in severe cases Excessive weight gain common **Family history:** History of PCOS, infertility, irregular menstrual periods, hirsutism may be present in mother, sisters, other female 1st degree relatives. Differential Diagnosis	**Blood tests:** • Free/Total Testosterone: useful to follow trend • LH, FSH • DHEAS • Androstenedione • 17-OHP • FT4, TSH • Prolactin • Pregnancy test (hCG) • Fasting blood glucose • HbA1c • Lipid panel Other tests to consider after consultation with Pediatric Endocrinologist: • 2 hr Oral Glucose Tolerance Test (OGTT)	**Routine:** Concern with menstrual periods: • Irregular periods persisting 2 years after menarche • Secondary amenorrhea • Primary amenorrhea (especially if symptoms consistent with PCOS) Concern for: • Hirsutism • Acne Find a Pediatric Endocrinologist	Previous growth data/growth charts Pertinent medical records Recent laboratory and radiologic studies	Additional Information PCOS: A Guide for Families References

Abbreviations: 17OHP, 17 Hydroxy-Progesterone; DHEAS, Dehydroepiandrosterone- Sulfate; LH, Luteinizing Hormone; FSH, Follicle-Stimulating Hormone.

Differential diagnosis for Polycystic Ovarian Syndrome (PCOS)

- Anovulatory menstrual periods
- Congenital adrenal hyperplasia (CAH): Late onset CAH, mild CAH, Non-classic/virilizing CAH
- Androgen producing tumors in adrenal gland or ovaries
- Exposure to androgenic drugs
- Hyperprolactinemia
- Hypothyroidism
- Cushing syndrome
- Idiopathic hirsutism
- Hypertrichosis
- Other conditions commonly associated with PCOS:
    - obesity (central/android), insulin resistance, glucose intolerance, acanthosis nigricans, type 2 diabetes mellitus
    - History of premature pubarche
    - Cardiovascular s/s: hypertension, dyslipidemia

Additional Information

- The diagnostic criteria for PCOS in adolescence are controversial, primarily because the diagnostic pathological features used in adult women, e.g. acne, irregular menses, and polycystic ovaries, may be normal pubertal physiological events.

- A thorough medical history, physical examination, and appropriate laboratory assessment are essential to be able to rule out other underlying medical conditions associated with hyperandrogenemia.

- No consensus exists on clinical criteria for diagnosis of hyperandrogenemia/androgen excess in adolescents. As per current recommendations:
    - Moderate to severe hirsutism constitutes clinical evidence of hyperandrogenemia

    - Girls with significant and persistent acne, unresponsive to therapy should be investigated for hyperandrogenemia
    - Serum total and/or free testosterone: best indicator of biochemical hyperandrogenemia. Needs to be done in a laboratory that can accurately measure lower levels of testosterone found in women. Free testosterone is more sensitive than total testosterone in detecting hyperandrogenemia because hirsute women commonly have a relatively low level of sex hormone binding globulin (SHBG), which is the main determinant of the bioactive portion of plasma testosterone.

- Menstrual periods evaluation:
    - Menstrual intervals persistently shorter than 20 days or greater than 45 days in individuals 2 or more years after menarche are evidence of oligo-anovulation
    - Consecutive menstrual periods > 90 days apart need evaluation
        - Lack of onset of menses by age 15 years or by more than 2–3 years after thelarche regardless of chronologic age warrants evaluation for PCOS

- Pelvic Ultrasound can be generally deferred during diagnostic evaluation of PCOS in adolescent girls unless there is a need for anatomic evaluation or clinical suspicion for tumor. It is best deferred till after evaluation by Endocrinologist.

- Obesity, hyperinsulinemia, and insulin resistance are often prevalent in adolescents at risk for PCOS. However, these should not be used as diagnostic criteria but as clues to investigate for PCOS.

- It is important to diagnose and treat PCOS in a timely manner. However, it is important to base the diagnosis on robust clinical and biochemical criteria to avoid over-diagnosis and unnecessary treatment.

Treatment

- A comprehensive treatment approach is needed which includes: Weight control/weight loss and medication therapy.
- Combination hormonal oral contraceptives are recommended as first-line treatment in adolescents with suspected PCOS with a therapeutic goal to treat acne, hirsutism, or anovulatory symptoms, and/or to prevent pregnancy. Some estrogen/progestin combinations are less androgenic than others and generally believed to be better for PCOS than others.
- Healthy lifestyle therapy to achieve weight loss should also be first-line treatment in the presence of overweight/obesity.
- Metformin may be used as a therapeutic option in case of concomitant impaired glucose tolerance (Pre Diabetes) and/or metabolic syndrome.

- The optimal duration of medical treatment required has not yet been determined.

Suggested References and Additional Reading

- Witchel SF, Oberfield S, Rosenfield RL, Codner E, Bonny A, Ibáñez L, Pena A, Horikawa R, Gomez-Lobo V, Joel D, Tfayli H, Arslanian S, Dabadghao P, Garcia Rudaz C, Lee PA. The Diagnosis of Polycystic Ovary Syndrome during Adolescence. Horm Res Paediatr. 2015 Apr 1.
- Legro RS, Arslanian SA, Ehrmann DA, Hoeger KM, Murad MH, Pasquali R, Welt CK; Endocrine Society. Diagnosis and treatment of polycystic ovary syndrome: an Endocrine Society clinical practice guideline. J Clin Endocrinol Metab. 2013 Dec;98(12):4565-92. doi: 10.1210/jc.2013-2350.
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