

Premature Adrenarche: A Guide for Families

What is premature adrenarche?

Pubic hair typically appears after age 8 years in girls and after age 9 years in boys. Changes in the hormones made by the adrenal gland lead to the development of pubic hair, axillary hair, acne, and adult-type body odor at the time of puberty. When these signs of puberty develop too early, a child most likely has *premature adrenarche*. The key features of premature adrenarche include

- Appearance of pubic and/or underarm hair in girls younger than 8 years or boys younger than 9 years
- Adult-type underarm odor, often requiring use of deodorants
- Absence of breast development in girls or of genital enlargement in boys (which, if present, often points to the diagnosis of true precocious puberty)

What hormones are made in the adrenal?

The adrenal glands are located on top of the kidneys and make several hormones. The inner portion of the adrenal gland, the *adrenal medulla*, makes the hormone *adrenaline*, which is also called *epinephrine*. The outer portion of the adrenal gland, the *adrenal cortex*, makes *cortisol*, *aldosterone*, and the *adrenal androgens* (weak male-type hormones). *Cortisol* is a hormone that helps maintain our health and well-being. *Aldosterone* helps the kidneys keep sodium in our bodies. During puberty, the adrenal gland makes more adrenal androgens. These adrenal androgens are responsible for some normal pubertal changes, such as the development of pubic and axillary hair, acne, and adult-type body odor. The medical name for the changes in the adrenal gland at puberty is *adrenarche*. Premature adrenarche is diagnosed when these signs of puberty develop earlier than normal and other potential causes of early puberty have been ruled out. The reason why this increase occurs earlier in some children is not known.

The adrenal androgen hormones, which are the cause of early pubic hair, are different from the hormones that cause breast enlargement (estrogens coming from the ovaries) or growth of the penis (testosterone from the testes). Thus, a young girl who has only pubic hair and body odor is not likely to have early menstrual periods, which usually do not start until at least 2 years after breast enlargement begins.

What else besides premature adrenarche can cause early pubic hair?

A small percentage of children with premature adrenarche may be found to have a genetic condition called *nonclassical (mild) congenital adrenal hyperplasia* (CAH). If your child has been diagnosed with CAH, your child's physician will explain the disorder and its treatment to you. Very rarely, early pubic hair can be a sign of an adrenal or gonadal (testicular or ovarian) tumor. Rarely, exposure to hormonal supplements, such as testosterone gels, may cause the appearance of premature adrenarche.

Does premature adrenarche cause any harm to your child?

In general, no health problems are directly caused by premature adrenarche. Girls with premature adrenarche may have periods a few months earlier than they would have otherwise. Some girls with premature adrenarche seem to have an increased risk of developing a disorder called *polycystic ovary syndrome* (PCOS) in their teenaged years. The signs of PCOS include irregular or absent periods and increased facial, chest, and abdominal hair growth. For all children with premature adrenarche, healthy lifestyle choices are beneficial. Healthy food choices and regular exercise might decrease the risk of developing PCOS.

Is testing needed in children with premature adrenarche?

Pediatric endocrinologists may differ in whether to obtain testing when evaluating a child with early pubic hair development. Blood work and/or a hand radiograph to determine bone age may be obtained. For some children, especially taller and heavier ones, the bone age radiograph will be advanced by 2 or more years. The advanced bone development does not seem to indicate a more serious problem that requires extensive testing or treatment. If a child has the typical features of premature adrenarche noted previously and is not growing too rapidly, generally, no medical intervention is needed. Generally, the only abnormal blood test is an increase in the level of dehydroepiandrosterone sulfate (also called *DHEA-S*), the major circulating adrenal androgen. Many doctors only test children who, in addition to pubic hair, have very rapid growth and/or enlargement of the genitals or breast development.

How is premature adrenarche treated?

There is no treatment that will cause the pubic and/or underarm hair to disappear. Medications that slow down the progression of true precocious puberty have no effect on the adrenal hormones made in children with premature adrenarche. Deodorants are helpful for controlling body odor and are safe. If axillary hair is bothersome, it may be trimmed with a small scissors.

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