

## Case Report: Idiopathic Premature Adrenarche in a Low Birth Weight Girl

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### Abstract

We present a case of idiopathic premature adrenarche in a 3.7-year-old female who was born with a low birth weight. The patient developed pubic hair at Tanner stage 2 without thelarche, had an advanced bone age by 2.5 years, and a markedly elevated DHEA-S level. Other androgen and adrenal function markers were within normal limits. Central puberty was excluded based on a low LH level and absence of breast development. This case highlights the

association between low birth weight and premature adrenarche, and discusses the management of associated symptoms such as body odor.

### Introduction

Premature adrenarche is defined as the early activation of adrenal androgen production, typically resulting in the appearance of pubic or axillary hair before the age of 8 in girls and 9 in boys, without other signs of puberty. It is often

idiopathic but has been associated with low birth weight and subsequent rapid weight gain. This case illustrates a classic presentation in a young girl with high DHEA-S but no central pubertal activation.

### **Case Presentation**

A 3.7-year-old female was referred for evaluation of early pubic hair. She was born at term with a birth weight of 2.4 kg. There was no family history of early puberty or endocrine disorders. On physical examination, she had pubic hair consistent with Tanner stage 2, no breast development, normal height and height velocity for age, and no clitoromegaly. Bone age assessment showed advancement by 2.5 years.

Laboratory investigations revealed:

- FSH: 4.35 mIU/mL (mildly elevated)
- LH: <0.2 mIU/mL (prepubertal)
- DHEA-S: 26.82 µg/dL (markedly elevated)
- 17-OHP: 0.65 ng/mL (normal)
- Testosterone: 0.27 nmol/L (low)
- Cortisol: 4 µg/dL (measured at 7 PM, not reliable for baseline assessment)
- Adrenal imaging (CT): No masses detected.

### **Discussion**

This case fits the criteria for idiopathic Premature Adrenarche (PA). The elevated DHEA-S level in the absence of other androgen excess signs or central puberty supports the diagnosis. Premature adrenarche is more common in girls and has been associated with being Small for Gestational Age (SGA). The underlying mechanism may involve early maturation of the adrenal zona reticularis, particularly in response to intrauterine growth

restriction. Studies such as those by Ibáñez et al. support this correlation, linking SGA with early adrenarche and potential future metabolic risk. The low LH level and absence of thelarche argue against Central Precocious Puberty (CPP). Additionally, the normal 17-OHP and imaging exclude non-classical Congenital Adrenal Hyperplasia (CAH) and adrenal tumors.

### **Associated Symptom: Body Odor**

The patient exhibited adult-like body odor, which is often associated with premature adrenarche due to apocrine gland activation. This can be managed with proper hygiene and use of child-safe deodorants. Recommended over-the-counter products include:

- Tom's of Maine Natural Deodorant for Kids: aluminum-free with mild scent.
  - SmartyPants Probiotic Deodorant: contains natural probiotics to reduce odor.
  - Fresh Kidz Deodorant Stick: formulated specifically for children and teens, free of aluminum and parabens.
- Parents should be reassured that the odor is a benign symptom and can be managed effectively without pharmacologic treatment.

### **Conclusion**

Premature adrenarche should be considered in young girls presenting with pubic hair and advanced bone age, especially if DHEA-S is elevated and other markers are within normal range. Low birth weight may be a contributing factor. Close monitoring is warranted to detect early progression to true puberty or metabolic complications.

## Recommended Deodorant Products for Children

Below are safe and commonly used deodorants for managing body odor in children with premature adrenarche:



Smarty Pitz – Coconut Mango: Aluminum-free, gentle on skin.



SmartyPits – Variety of Probiotic Deodorants: Natural, safe, and available in several scents.



Tom's of Maine – Wicked Cool: Designed for teens and kids, free of aluminum and parabens.



Fresh Kidz – Girls Purple Deodorant: Natural, gentle formulation, suitable for children.

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