

Premature Pubarche Secondary to Herbal Oil Exposure

Kokila Jeyamurugan* and Haiyan Lu

Department of Pediatrics, Brookdale University Hospital Medical Center, New York, USA.

*Correspondence:

Kokila Jeyamurugan, Department of Pediatrics, Brookdale University Hospital Medical Center, New York, USA, Tel: 862-222-6699.

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ABSTRACT

Premature pubarche (PP) is characterized by the growth of pubic hair before the age of 8 years in girls and 9 years in boys. In 80 to 95% of cases, PP is related to premature adrenarche (PA) secondary to idiopathic premature secretion of adrenal androgens. Although prepubertal pubarche is considered a variant of normal development, pathological causes should be ruled out, prompting a search for a source of androgen. Although hyperandrogenemia may be endogenous or exogenous in origin, most persons with prepubertal pubarche have normal serum concentrations of sex steroids, and an underlying cause is not identified. In such cases, possible exposure to endocrine disruptors should be considered.

We report a case of premature pubarche in a 9-month-old boy who developed isolated pubarche after exposure to an herbal oil containing multiple essential oils including lavender, clary sage, grapefruit and peppermint. Pubarche resolved shortly after the use of herbal oil was discontinued.

Keywords

Lavender, Herbal oil, Premature pubarche, Endocrine disruptors.

Introduction

Premature pubarche (PP) is defined as isolated pubic hair development without other signs of puberty before age 8 in girls and age 9 in boys [1]. Premature adrenarche (PA) reflects the premature production of adrenal androgens and is the most frequent cause of pubarche. PP is generally thought to be a benign condition, but it can also be the first sign of underlying disease that can cause hyperandrogenism (tumors, adrenal hyperplasia) and needs to be ruled out [2]. Previous case reports have described an association between prepubertal breast developments with lavender-containing fragrances, but there appear to be no reports associated with premature pubarche.

We report a case of isolated premature pubarche in an infant that resolved after cessation of topical exposure to lavender containing herbal oil.

Case Presentation

A 9-month-old male infant was referred to our endocrinology clinic by his pediatrician for pubic hair growth of apparently 2 to 3 weeks' duration. The mother denied any breast enlargement or axillary hair. She did not notice any change in body odor and denied the use of any creams or oils locally. The infant was otherwise healthy and his height and weight were at the 65th percentile and between the 10th and 50th percentiles, respectively.

He had faint straight downy hair over the pubis. His testes were 1 ml in volume bilaterally and of normal consistency. His penis was normal in size. He had no glandular breast tissue and no axillary hair. His neurological exam was grossly normal, and he had no areas of skin hyper- or hypopigmentation.

Laboratory work up showed normal thyroid function; the follicle-stimulating hormone (FSH) concentration was <0.7 mIU/ml (reference range, 1.6 to 8), luteinizing hormone <0.2 mIU/ml, testosterone 3 ng/dl (reference range, ≤16), dehydroepiandrosterone (DHEA) sulfate 13 µg/dl (reference range, ≤26) and 17-alpha-

hydroxyprogesterone < 8 ng/dl (reference range, \leq 147), were normal.

On evaluation three weeks later, there were no changes noted in breast or in pubic hair growth. On repeated questioning, the patient's mother reported applying an "herbal oil" containing lavender and other essential oils such as clary sage, grapefruit and peppermint for her scalp hair growth starting shortly before the initial presentation. The mother was recommended to stop using the oil and to monitor the patient for any further pubic hair growth. On follow up in two months, the pubic hair completely resolved after application of the herbal hair was discontinued. At four months follow up, the pubic hair reappeared. On questioning, the mother admitted to restart using the herbal oil for herself. She was strictly advised to discontinue the hair oil application following which the pubic hair started to disappear. Several months later, his pediatrician stated that the pubic hair had resolved completely.

Discussion

Pubarche refers to the development of pubic hair, which may be an isolated event or be accompanied by axillary hair, oily skin, acne or apocrine body odor [2]. Premature adrenarche (PA) is the premature production of adrenal androgen precursors, mainly dehydroepiandrosterone (DHEA) and its sulfate (DHEAS). Although PA is considered the most common cause of premature pubarche (PP), the latter occasionally occurs in isolation, without an associated increase in adrenal androgens [1].

In our patient, pubarche was an isolated finding and the initial laboratory work up were all within acceptable limits. This led to the suspicion of herbal oil as a potential source, because it was the only topically applied agent that the child was exposed to. Use of lavender containing herbal oil was considered trivial by the patient's mother, who acknowledged its use only after repeated questioning. The use of herbal oil containing lavender and the resolution of the pubarche within months after ceasing its use suggest that these oils may possess endocrine-disrupting activity that causes an imbalance in estrogen and androgen pathway signaling [3]. Importantly, it should be noted that these products need not be applied directly to the patient but may be transferred via skin-to-skin contact as in our case.

An endocrine-disrupting chemical is an exogenous chemical that interferes with hormones and their actions in the body [4]. Lavender oil is considered an essential oil that has become more

popular in the United States as an alternative for medical treatment and in aromatherapy. Products containing lavender oil are sold over the counter and are present in an increasing number of consumer products, including shampoos, hair gels, soaps, and body lotions [4,5]. Studies have demonstrated that lavender oil have hormone disrupting activities on human cell lines [6].

Hence, it is important that physicians understand the potential effects of such readily available products and include these products in differential diagnosis when appropriate.

Conclusion

There have been several case reports of accidental exposure to estrogenic/ androgenic compounds in cosmetic products, food and pharmaceuticals. Lavender containing products are well known to be associated with prepubertal breast development in males and females and the premature pubarche in our case could possibly be related to the herbal oil containing lavender.

Although further studies are needed to establish these relationships, the medical community should be aware of the possibility of endocrine disruption and should caution patients about repeated exposure to any products containing such essential oils. Indeed, recognition of these associations may allow for early preventive measures.

References

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