

An Elevated Tumor Marker and Adrenarche in a Child using Lavender Oil

Susan Lathrop, MSN, ARNP, CPNP | Blank Children's Hospital, Des Moines, IA



CLINICAL PRESENTATION

7-year 3-month-old Caucasian female presented with concern about pubic hair



History

- Adult-type body odor noted at age 3; pubic hair noted at age 5
- Recent breast development and tenderness, axillary hair, oily skin, and leukorrhea
- Sharp increase in weight over past 2 years, BMI mirrors this increase
- Severe headaches increasing over past 2 weeks
- Using undiluted lavender essential oil 3-4 times daily on feet for bad odor
- No known history of exogenous hormone exposure
- Recent bone age 7.83 years at chronologic age 6.75 years
- Family history: mother and mother's cousin had menarche at age 10, short stature in mother's cousin, and migraines in maternal great grandmother



Physical Examination

- Height 88%, weight >99%, BMI >99%
- Social, interactive, healthy appearing child
- Some fullness of thyroid
- Breasts and pubic hair Tanner stage 2
- Axillary hair present; no acne or oily skin
- Neuro exam intact



Evaluation

- Complete blood count and comprehensive metabolic panel normal
- Thyroid function studies and antibodies normal
- FSH, LH, and estradiol all pre-pubertal
- Adrenal steroids normal
- hCG tumor marker 15 mIU/mL (normal <1); repeat 16.1 mIU/mL using heterophile blocking reagent
- AFP tumor marker normal
- MRI of head unremarkable
- Abdominal ultrasound normal



Interventions and Follow-up

- Discontinued lavender oil: hCG tumor marker returned to normal in 2 weeks
- Recommended lifestyle changes due to elevated BMI
- Referral to hematology/oncology: no pathology
- Referral to neurology: no pathology
- Family cancelled endocrine follow-up appointments



Discussion

- Obesity is associated with premature adrenarche and earlier puberty
- Mother brought an entire essential oils "kit" to clinic but only admitted to using lavender oil
- Recommended application is adding 1-2 drops to carrier oil before application; it was applied undiluted several times a day
- Research suggests lavender oil may be linked to gynecomastia in boys
- No research evidence that using essential oils causes elevated hCG tumor marker; however, once discontinued her lab value returned to normal
- No conventional medical explanation for markedly elevated tumor marker

Complementary and Alternative Methods (CAM) of Healing

- In the US, ~30% of adults and ~12% of children report using CAM
- **Complementary methods of healing:** added to conventional medicine remedies in attempts to augment treatment
 - Common: vitamins, herbs, essential oils, and probiotics
 - Mind-body practices such as yoga, meditation, massage therapy, acupuncture, tai chi, and chiropractic manipulation
- **Alternative methods of healing:** used in place of conventional medicine
 - Traditional healers often fill this niche: Ayurvedic medicine, traditional Chinese medicine, Homeopathy and naturopathy
- **Integrated medicine:** the practice of cooperative approaches to health care by merging more than one healing method
- **Safety concerns:** drug interactions, product contamination, no FDA control
 - Professional and consumer information is available on WWW
 - Directing patients to this information shows willingness to consider CAM
- **Research:** 263 matches between *CAM healing and endocrine and metabolic* in Cochrane reviews – most demonstrate insufficient evidence to make recommendations in favor of CAM treatments
- **Resource:** National Center for Complementary and Integrative Health at the National Institutes of Health. Includes free: CEUs, newsletter, and patient education materials. <https://nccih.nih.gov/>

References

Henley, D. V., Lipson, N., Korach, K. S., & Bloch, C. A. (2007). Prepubertal gynecomastia linked to lavender and tea tree oils. *New England Journal of Medicine*, 356(5), 479-485.

Charkaluk, M. L., Trivin, C., & Brauner, R. (2004). Premature pubarche as an indicator of how body weight influences the onset of adrenarche. *European Journal of Pediatrics*, 163(2), 89-93.

 Blank Children's Hospital
UnityPoint Health

