An Unusual Cause of Vaginal Bleeding in a Prepubertal Girl

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A 6-year-old girl presented with vaginal bleeding that had begun the previous day. She had no previous history of bleeding or trauma. Upon physical examination, her weight was 30 kg, her height was 117.5 cm, and her body mass index was 21.73 kg/m². With regard to puberty she was considered as Tanner stage A1P1M2, and the other physical examination findings were normal except for active vaginal bleeding.

Laboratory investigations showed that follicle-stimulating hormone (FSH) was .2 mIU/mL, luteinizing hormone (LH) was .1 mIU/mL, and estradiol (E2) was 15.8 pg/mL. Her thyroid function, hemogram, and biochemical parameters were normal. The patient’s “bone age” was equal to 7 years and 10 months. A pelvic ultrasound revealed the size of her uterus as 34.6 × 14.5 × 50 mm, her left ovarian dimensions as 14.5 × 8 mm, and her right ovarian dimensions as 15 × 10 mm. A gonadotropin-releasing hormone (GnRH) stimulation test showed a prepubertal response (LH peak response of .1 mIU/mL). A more detailed history revealed that she had also consumed approximately 3 kg of strawberries within the past 2 days.

The patient was sent home without any treatment except for careful monitoring. In a follow-up visit 1 month later, she had no more bleeding and physical examination demonstrated that she was now Tanner stage A1P1M1. Laboratory tests showed that FSH was .2 mIU/mL, LH was .1 mIU/mL, and E2 was 5 pg/mL. Pelvic ultrasound showed the uterus dimensions as 20 × 12 × 25 mm, left ovarian dimensions as 12 × 8 mm, and right ovarian dimensions as 11 × 9 mm.

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Editor’s note: Each month, this department features a discussion of an unusual diagnosis. A description and images are presented, followed by the diagnosis and an explanation of how the diagnosis was determined. As always, your comments are welcome via email at pedann@Healio.com.
Diagnosis:

Estrogenic Effect of Endocrine Disruptors from Food Consumption

We suspected that the bleeding resulted from estrogenic effect of the endocrine disruptors as a consequence of the consumption of large amounts of strawberries within a short period of time.

DISCUSSION

Endocrine disruptors are exogenous substances that change the development and the function of the endocrine system. These substances may be present in natural food or in processed food. Endocrine disruptors may be responsible for oligospermia, abnormal sperm structure, impaired testicular steriogenesis, testicular atrophy, increased uterine dimensions, and early puberty because of their estrogenic, antiestrogenic, and antiandrogenic effects. Natural endocrine disruptors are usually known as phytoestrogens. They are present in foods such as carrots, garlic, strawberries, parsley, apples, and coffee. When large amounts of phytoestrogens are consumed, an estrogenic effect occurs. Synthetic endocrine disruptors are present in various products used in the food industry, agriculture, and at home.

Studies conducted within the past 40 years show that endocrine disruptors cause alterations in the pubertal development. More recently, it was observed that the onset of puberty and age of menarche tended to occur earlier due to environmental factors such as dietary habits. Endocrine disruptors may change the anabolism, catabolism, transport, and excretion of the hormones, including estrogen, testosterone, thyroid, luteinizing hormone, and follicle-stimulating hormone, as well as its effect in the target cells. These chemical agents may show estrogenic effect directly or indirectly via GnRH by binding to estrogen receptors, increasing the aromatase activity, or increasing estrogen sensitivity. Effects of the endocrine disruptors may vary by age of the person, duration of use, and amount of contact.

In the modern world, various substances, called “plant growth-regulator hormones” are used to enhance the yield of agricultural crops and prolong their storage life. The effects of these substances on human health are not clear. Plant growth-regulator hormones are categorized into five main groups: auxins, gibberellins, cytokinines, ethylene, and dormins (abscisic acid). In Turkey (where the child in this case lives), the auxin preparations beta-naphthoxy acid, naphthalene acid + naphthalene acid amide, and 4-chlorophenoxy acetic acid are approved for use by the Ministry of Agriculture.

In the case of this patient, we suspected that the bleeding resulted from the estrogenic effect of the endocrine disruptors contained in the large amount of strawberries she had consumed within a short period. After she removed the strawberries from her diet, the bleeding stopped and did not recur, and her physical examination results and laboratory results regressed to prepubertal levels.

REFERENCES