Case Report

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A Case of Pendred's Syndrome Presenting with Amenorrhea

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Key Words

Pendred's syndrome
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Abstract

Pendred's syndrome is manifested by congenital sensorineural deafness in association with familial goiter due to defective organic binding of iodine in the thyroid gland. The majority of patients with Pendred's syndrome are euthyroid. We report on an unusual case of a patient with Pendred's syndrome presenting with amenorrhea and late-onset hypothyroidism.

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Introduction

Pendred's syndrome is a hereditary autosomal recessive disorder manifested by congenital sensorineural deafness and familial goiter due to a disturbance of the organic binding of iodine in the thyroid gland. The estimated incidence is 1 -5/100,000 [1]. Onset of goiter occurs most often at puberty [2], and the majority of patients remain euthyroid [1]. We present an unusual case of Pendred's syndrome presenting with late-onset hypothyroidism manifesting as amenorrhea.

Case Report

The patient was a 28-year-old female, G2 P0020, presenting with amenorrhea. Menarche had occurred at age 13, with normal regular periods until 4 months prior to evaluation. She denied any history of psychogenic disorders, endocrine disease or nutritional disorders that could account for the amenorrhea. Her medical history was only significant for severe hearing loss since birth and the development of goiter at puberty which was evaluated for the first time 4 months prior to the onset of amenorrhea. Thyroid function tests at that time revealed an elevated TSH at 9.1 μ U/ml (normal range 0.3-5.0 μ U/ ml) and normal T3 and T4. No treatment had been initiated at that

time. Surgical and family histories were significant for 2 spontaneous abortions at ages 18 and 23. She was on no medication at the time of presentation.

On physical examination the patient was a healthy female with a normal habitus and normal female secondary sex characteristics. She was 5 feet 4 inches tall and weighed 118 pounds. The vital signs were normal. The head and neck examination was remarkable for a moderately enlarged diffuse thyroid gland with no discrete nodules and no stigmata of hypothyroidism or hyperthyroidism. She had no exophthalmos. Examination of the heart, lungs, breasts and

abdomen revealed no abnormalities. Pelvic examination revealed normal female external genitalia, estrogenized vaginal mucosa, normal-size uterus, and no adnexal masses.

Neuromuscular examination was unremarkable.

Complete blood counts, electrolytes, liver function tests and renal function tests were normal.

The serum β -hCG was negative. Prolactin was 7.1 ng/ml (normal range 0.0-15 ng/ml). Repeat thyroid function tests were as follows: TSH = 11.2 μ U/ml, T4 = 4.2 μ g/dl (normal range 4.4-12.0 μ g/dl), and T3 = 0.45 ng/ml (normal range 0.8-2.2 ng/ml). Antithyroid and antimicrosomal antibodies were negative. A perchlorate washout test revealed a 39% discharge of the radioactive iodine taken (a drop of more than 5% is considered positive for this test). A progestin challenge test performed by giving 10 mg of Provera orally for 5 days resulted in a withdrawal bleed.

Audiometry revealed severe bilateral sensorineural deafness.

The patient was commenced on levothyroxine 100 μ g/day. Two months after starting treatment, her menses resumed. Thyroid function tests done at that time showed her to be euthyroid.

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Discussion

The majority of patients with Pendred's syndrome are euthyroid [3]. This patient progressed from euthyroidism to hypothyroidism over a period of 4 months. In the presence of normal milestones, a normal IQ and previously regular menses, it is likely that our patient was euthyroid for the greater part of her life. There was no evidence (antithyroid antibodies, previous radioactive iodine therapy or surgery) to explain the occurrence of hypothyroidism in this patient. The occurrence of amenorrhea as in this patient is an unusual presentation of Pendred's syndrome. Hypothyroidism is associated with a decreased level of sex-hormone-binding globulin, increased conversion of androstenedione to testosterone, testosterone to estradiol and androstenedione and estrone [4]. These abnormalities predispose hypothyroid women to acyclic estrogen exposure. Hypothyroidism may also be accompanied by hyperprolactinemia leading to anovulation.

Our patient had normal prolactin levels and no other obvious conditions to explain her anovulation and amenorrhea. In the absence of such conditions, and as her menses resumed after she became euthyroid, it is most likely that amenorrhea in this patient was due to hypothyroidism.

The abnormal perchlorate discharge test in this patient indicated the presence of an organification defect. Quantitative and qualitative studies done on thyroid peroxidase in patients with Pendred's syndrome have been normal [5]. Mason et al. [6] have demonstrated abnormalities of the messenger ribonucleic acid encoding the 3-prime region of thyroglobulin. The exact nature of the biochemical defect in Pendred's syndrome remains unknown.

In conclusion, while the majority of patients with Pendred's syndrome are euthyroid with normal menstrual cycles, late-onset hypothyroidism can intervene, leading to anovulation and amenorrhea.

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