



Case report

Postmenopausal mild hirsutism and hyperandrogenemia due to ovarian Sertoli-Leydig cell tumor: A case report

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ABSTRACT

Among several types of ovarian tumors, Sertoli-Leydig cell tumors are considered significantly rare, accounting for less than 1% of all primary ovarian tumors. Hirsutism caused by ovarian tumors accounts for approximately 1% of all cases of hirsutism. We report a case of a woman with an ovarian Sertoli-Leydig cell tumor who presented with hirsutism. A 45-year-old woman (gravida 12, para 2) who experienced menopause when she was 43 years old had excessive hair on her face and lower abdomen since 2 years. Her body mass index was 24.3 kg/m². She also had hair growth on her upper lip, submandibular area, lower abdomen, vulva, and bilateral tibia (front), and around her breast. She had a Ferriman–Gallwey score of 8. Ultrasound findings revealed a 4.8 × 3.5-cm left adnexal mass. Pelvic computed tomography (CT) findings revealed that her left accessory gland had a low-density mass (CT value, 25 Hu). Her serum testosterone level was 15.80 nmol/l. The patient underwent a laparoscopic left adnexectomy. Subsequently, she was diagnosed with ovarian Sertoli-Leydig cell tumor by immunohistochemical staining. A week after surgery, her serum testosterone level decreased from 15.80 nmol/l to 1.03 nmol/L. Her hirsutism almost completely disappeared 3 months after surgery. It is vitally important to establish the final diagnosis according to the clinical manifestations and laboratory values in addition to imaging studies and laparoscopic examination of a rare coexistence of hirsutism and hyperandrogenemia in a postmenopausal woman based on ovarian pathology.

1. Introduction

This is an interesting clinical case report of a postmenopausal woman with mild hirsutism and hyperandrogenemia due to the presence of an ovarian Sertoli-Leydig cell tumor (SLCT).

SLCT is a rare tumor of the sexual cord neoplasms, accounting for less than 1% of all primary ovarian tumors. Hirsutism caused by ovarian tumors accounts for approximately 1% of all cases of hirsutism [1]. The Sertoli cells are located in the male reproductive glands, which produce sperm cells, and the Leydig cells are also located in the testes, which release male sex hormones. These cells are also found in a woman's ovaries. The cancerous cells produce and release the male sex hormone testosterone, and the patients often have excessive androgen and thus present with amenorrhea, hirsutism, hoarse voice, and enlarged clitoris. In patients without hormonal manifestations, the disease typically presents with abdominal pain and increased abdominal circumference,

usually with a palpable adnexal mass at physical examination [2]. The vast majority (greater than 95% of tumors) of tumors are unilateral, Stage 1 according to the International Federation of Gynecology and Obstetrics guidelines, and either moderately or poorly differentiated [3].

2. Case presentation

A 45-year-old woman had excessive hair on her face and lower abdomen, present since 2 years. She had two children and experienced amenorrhea for 2 years after drinking medicated wine with donkey whip, sea snake, and sea dragon approximately half a year ago. She noticed hair growth on her upper lip, submandibular area, lower abdomen, vulva, and bilateral tibia (front) and around her breast. She had a Ferriman–Gallwey score of 8. Clinical examination revealed normal developments of female sex without virilization of the external genitalia or a change in voice.

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Figure 1. Computed tomography (CT) imaging of an ovarian lesion. CT imaging of an ovarian lesion revealed a 4.5 × 5.0-cm-diameter well-circumscribed left ovarian nodule.

Hormone profile revealed increased testosterone level (15.80 nmol/L [reference value, 0.4854–2.6349 nmol/L]) and E2 level (385.79 pmol/L [reference value, 0–118.17 pmol/L]) and decreased follicle-stimulating hormone level (2.42 IU/L [reference value, 23–116.3 IU/L]) and luteinizing hormone level (2.03 IU/L [reference value, 15.9–54 IU/L]). She also had increased androstenedione (22.6 nmol/L [reference value, 5.2 ± 1.5 nmol/L]), 17-hydroxyprogesterone (16.47 nmol/L [reference value, 7.4 ± 2.0 nmol/L]), and androstenedione levels (22.6 nmol/L [reference value, 5.2 ± 1.5 nmol/L]). Moreover, her dehydroepiandrosterone sulfate (3390 nmol/L [reference value, 3390 ± 310 nmol/L]), prolactin ((11.40 ug/L [reference value, 1.8–20.3 ug/L]), and thyroid-stimulating hormone (1.892 uIU/ml [reference value, 0.35–5.5 uIU/ml]) levels were within the normal range. Furthermore, her corticoid rhythm, aldosterone-renin ratio (13.94 [reference value, <32]), and adrenocorticotropic hormone levels (31.50 pg/ml [reference value, <46 pg/ml]) were normal. All tumor markers were normal, including beta human chorionic gonadotropin, cancer antigen (CA) 125, and CA199.

Vaginal ultrasound detected a 4.8 × 3.5-cm left adnexal mass. A pelvic CT confirmed the presence of a low-density mass approximately 4.5 × 5.0 cm in the patient's left accessory gland (CT value, 25u) (Figure 1). A 0.8-cm-diameter right adrenal nodule was also observed. Magnetic resonance imaging revealed that the pituitary gland was normal.

The patient underwent laparoscopic left adnexectomy. The left ovary (approximately 6.0 × 5.0 cm) was slightly enlarged and white. Histopathology confirmed an SLCT located in the stroma of the left ovary. Immunohistochemistry indicated positive staining for inhibin A, Wilms' tumor 1, and calretinin (partially positive) (Figure 2A,B,C,D) and negative staining for chromogranin A, synaptophysin, epithelial membrane antigen, and smooth muscle actin. The patient's testosterone level (1.03 nmol/L) significantly decreased postoperatively after a week. During the 3-month follow-up, the patient's health significantly improved with signs of hirsutism.

2.1. Statement

The study had accepted the agreement of the patient and all inspections and operations conducted during the course of the study do not violate medical ethical principles.

3. Discussion

Establishing the diagnosis of postmenopausal hirsutism and hyperandrogenism is regarded challenging considering the significantly complex causes of these diseases, including the intricate anatomical position and physiological functions of the ovary and adrenal glands or other atypical reasons.

The Sertoli cells are located in the male reproductive glands, which produce sperm cells, and the Leydig cells are also located in the testes, which release the male sex hormone testosterone. The World Health Organization has classified ovarian tumors into surface epithelial (65%), germ cell (15%), sex cord-stromal (10%), metastatic (5%), and other

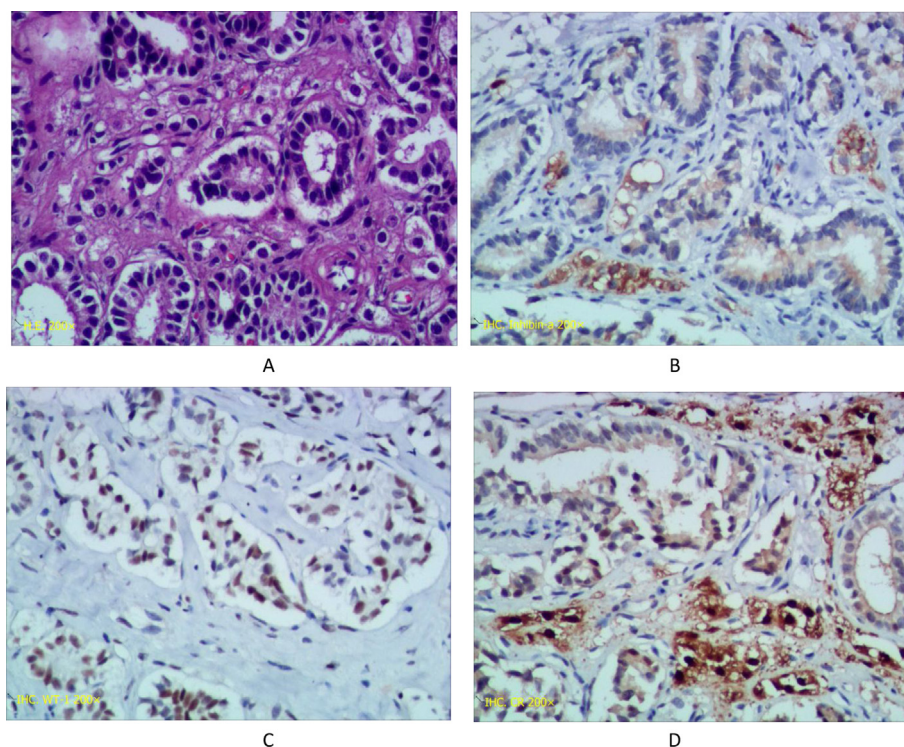


Figure 2. Hematoxylin-eosin (H&E) staining and immunohistochemistry images showing neoplastic cells. A: H&E staining images; B,C,D: immunohistochemistry images showing neoplastic cells positively stained for inhibin A, Wilms' tumor 1, and calretinin (partially positive).

tumors (5%) [4]. The ovarian sex cord-stromal tumors are relatively rare, accounting for only 5%–8% of all ovarian neoplasms, and less than half of these tumors can secrete androgen [5]. The SCLTs account for less than 1% of all primary ovarian tumors and are typically observed in the unilateral ovary. Considering the excessive production of androgen produced by SCLTs, a woman may develop the following symptoms: deepening of the voice, enlarged clitoris, facial hair, decreased breast size, and amenorrhea. In our case, the initial symptom manifested by the patient is hirsutism. The rapid progression of hirsutism strongly indicates the possible presence of potential adrenal or ovarian tumor.

Considering the patient's normal cortisol rhythm and dehydroepiandrosterone sulfate level, Cushing syndrome and androgen-producing adrenal nodules were ruled out. Moreover, considering the patient's normal menstrual cycle, no weight gain, and no clinical signs of hyperandrogenism in the childbearing age, the possibility of delayed diagnosis of congenital adrenal hyperplasia or polycystic ovary syndrome was ruled out.

Hyperandrogenism with a rapidly progressing hirsutism (a Ferriman–Gallwey score of 8) indicates tumor etiology [4]. Subsequently, an ovarian tumor was observed during pelvic ultrasound, while CT scan revealed a contrast-enhanced left adnexal mass. The patient was subsequently diagnosed with SLCT based on histopathological examination and immunohistochemistry after surgery. Hence, the increased androstenedione and 17-Hydroxyprogesterone levels are possibly attributed to the presence of ovarian tumors that secrete androgen.

The specific mechanisms of this tumor are unclear. Changes (mutations) in the DICER-1 gene may play significant roles. Mutations were observed in approximately 60% of SCLT cases [6]. SCLTs are most often observed in young women aged 20–30 years. However, the tumor can be observed across all ages [7]. Comprehensive clinical history, detailed physical examination, and hormone tests are required in these patients to establish an accurate diagnosis. Imaging plays an important role in SCLT diagnosis because an ultrasound or CT scan significantly determines tumor location, size, and shape. However, CT is more accurate than ultrasound in comprehensively determining tumor location.

In conclusion, we report a case of in a postmenopausal woman presenting with hirsutism. Although SLCT is rare and difficult to diagnose biochemically or with imaging studies, androgen-secreting tumors should be considered in postmenopausal women with hyperandrogenism and hirsutism.

Declarations

Author contribution statement

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Competing interest statement

The authors declare no conflict of interest.

Additional information

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