Case Report

Primary amenorrhea with Swyer syndrome: a rare case report

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Abstract

Swyer syndrome with complete gonadal dysgenesis is associated with an absence of testicular differentiation in a phenotypic female with a 46, XY karyotype. The diagnosis is usually made at adolescence when primary amenorrhea is investigated. Here is an interesting case report of 18-year-old unmarried girl, who presented with primary amenorrhea and non-development of breasts. Her body built was musculin with broad shoulders, prominent Adam's apple and deep voice. Examination of her secondary sexual charaistisctcs revealed no breast development, absent axillary hair and sparse pubic hairs with female type of external genitalia. Laboratoryanalyses revealed serum follicle-stimulating hormone and luteinizing hormone levels compatible with hypergonodotropichypogonadism. Pelvicultrasonography showed an infantile uterus and streak gonads. Chromosome analysis revealed 46, XYkaryotype. Laparoscopic removal of streak gonads was done as there is a risk of gonadoblastoma in such cases. The patient was started on hormonal replacement therapy. Swyersyndrome results mainly due to mutation in certain genes such as SRY gene, which leads to failure of development of testis.

Keywords: *Gonadal dysgenesis, primary amenorrhea, Swyer syndrome.*

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Introduction

Complete gonadal dysgenesis or Swyer syndrome was first described by Jim Swyer in 1955~ since then, a number of cases were reported.[1]It is characterized by bilateral streak gonads, normally developed Mullerian structures, female -pattern external genitalia and hypergonadotropichypogonadism.[2]Patients usually present in adolescence with primary amenorrhea and with lack of secondary sexual characteristics. The incidence of Swyer syndrome is 1:100,000.[3]The purpose of reporting this case is of its rarity and the importance of diagnosis of XY female for appropriate management as there is a high incidence of gonadal malignancies and also to counsel about fertility options.

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Case report

An 18-year-old girl presented with complaints of primary amenorrhea and no breast development. There was no history of cyclical abdominal pain, hormonal intake, surgery, radiation exposure, chemotherapy, headache or visual disturbances or family history of delayed puberty. She was the fifth child of a non-consanguineous marriage. She has four elder sisters and all of them attained their menarche at appropriate age. On examination, she was phenotypically female with masculine body built. There was no goiter, hirsutism or Turner's stigmata. Height was 162cm, arm span 170cm, upper segment: lower segment was normal. Weight 49kg, mody mass index was 19.08kg/m^2. Breasts Tanner stage I (Figure 1),absent axillary hair (Figure 2),female pattern pubic hair stage II with female external genitalia with intact vaginal orifice and no palpable gonads.

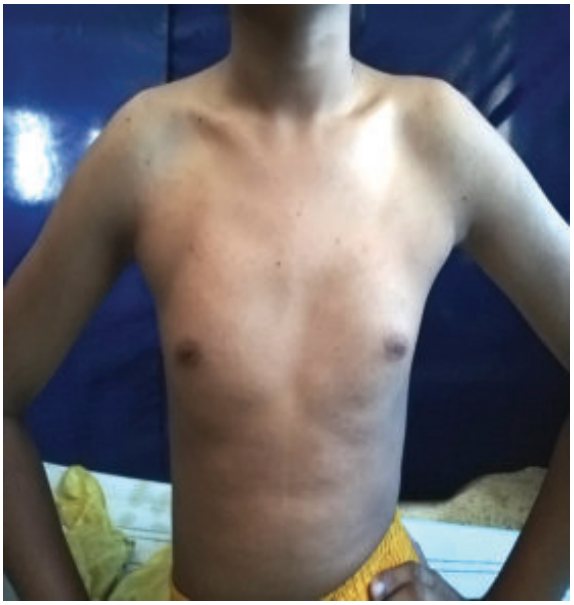

Figure 1 Breast development Tanner stage 1

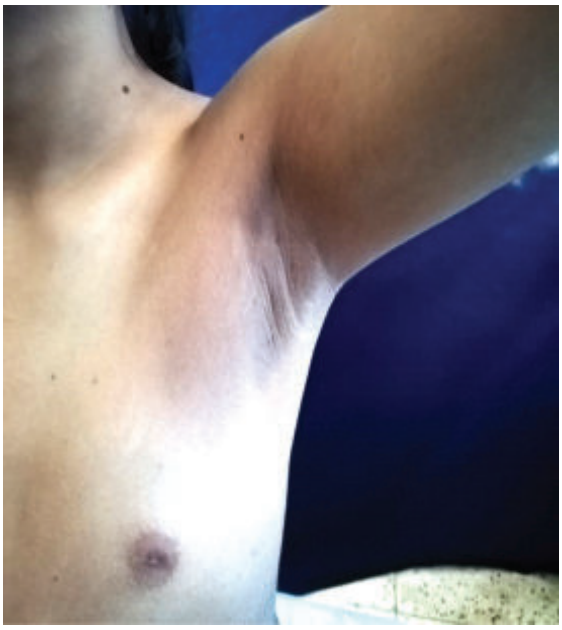

Figure 2 Axillary hair absent

Laboratory findings were consistent with hypergonadotrophic hypogonadism (Table I) with low oestrogen, testosterone and anti--Mullerian hormone (AMH).

Table I Hormonal test for the etiology of primary amenorrhea

Hormones	Results	Normal value
FSH (mIU/ml)	116.16	3.03-8.08
LH (mIU/ml)	28.96	1.80-11.78
Estradiol (pg/ml)	10.00	20- 400
Prolactin (mIU/L)	240.74	59-619
FT_4 (pmol/l)	13.48	13.48
TSH (uIU/ml)	2.30	0.47-5.01
Cortisol (nmol/L)	190.98	101-690
ACTH (pg/ml)	14.40	8.3-57.8
17 OH Progesterone (ng/ml)	2.19	0.10-0.80
Testosterone (ng/ml)	0.08	0.15-0.9
Anti mullerian hormone (ng/ml)	0.02	1.05-12.86

Serum thyroid -stimulating hormone and prolactin were normal. Short Synacthen test reveals adequate adrenal reserve (Table II). Ultrasound showed an infantile uterus with streak gonads, without endometrial or myometrial differentiation. Karyotype revealed 46,XY. SRY gene analysis by Fluorescence in situ hybridization (FISH) method showed no mutation. Prophylactic bilateral gonadectomy was performed and histological examination showed streak gonads with fallopian tube. Counseling of parents was done. She was started on hormonal replacement therapy (HRT) with conjugated estrogen.

Table II ACTH stimulation test

Hormones	Result	Normal value
Cortisol at 30 min	421.28	Complete insufficiency <101Partial insufficiency 101-690
Cortisol at 60 min	679.40	

Discussion

Swyer syndrome is a form of pure gonadal dysgenesis. The first known step of sexual differentiation ofa normal XY fetus is the development of testes. The early stages of testicular formation in the 2month of gestation require the action of several genes, of which the most important is SRY, the sex determining region of the Y chromosome. Deletion of SRY is detected in 10-20% of patients and normal in the rest of the patients (80 to 90%).In most cases, the cause is not identified or may be due to mutation of other genes in the sex differentiation pathway such as the autosomal genes DHH, MAP3K1, NR5A1, SOX9, WT1 and DAX1 on the X chromosome.[4]When such a gene is mutated, the bipotential gonads fail to differentiate into testes in an XY fetus. Without testes, no testosterone or AMH is produced. Without testosterone, there is no virilization of external genitalia, resulting innormal female genitalia. Adrenal gland is not affected and can produce androgens and most of these persons develop pubic hair. As AMH is absent, the Mullerian ducts develop into uterus, fallopian tube, cervix and vagina. People with Swyer syndrome have reared up as female as they have typical female external genitalia with normal uterus, fallopian tubes with streak gonads (ovaries or testes) which are not functional. Gonadoblastomas are seen in 20–30% of women with Swyer syndrome and so should be removed following the diagnosis. Estrogen therapy should be administered as quickly as possible to ensure adequate bone mass formation and prevent reductions of bone mineral density that lead to osteopenia and osteoporosis. Cyclic estrogen and progesterone replacement is indicated until 50 years of age, when hormonal therapy may be discontinued.[5]These patients can have a normal sexual life and they can conceive using donor oocytes and artificial reproductive techniques.

Conflict of interest: Nothing to declare.

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