Swyer's Syndrome : An Uncommon Cause of Primary Amenorrhoea

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MJAFI 2009; 65 : 186-187

Key Words : Swyer's syndrome; Amenorrhoea

Introduction

Swyer's syndrome was first described by Gim Swyer in 1955. Affected individuals have an XY karyotype but the external and internal genitalia is of the female type. The gonads are usually replaced by fibrous streaks. Patients usually present in adolescence with primary amenorrhoea and lack of secondary sexual characteristics. The exact incidence of the syndrome is not known. It is an extremely rare condition.

Case Report

A 17 year old girl was brought to the out patient department by her parents, with complaints of primary amenorrhoea. She did not give any history of cyclical abdominal pain, hormonal intake, radiation exposure, chemotherapy or any central nervous symptoms such as headache or visual disturbances. She gave no history of significant trauma or of having undergone any surgical procedure. There was no history of childhood tuberculosis nor was there a history of Koch's in the family.

She was the first issue of a non consanguineous marriage and mother's age at the time of delivery was 27 years. She has a younger brother who is 11 years old. On general examination she was 159 cm tall and weighed 54 kg. There was no evidence of acanthosis nigricans, acne, hirsutism, goitre, cushingoid features or Turners stigmata. Examination of secondary sexual characteristics revealed that the breast was small and poorly developed with hypopigmented areola (Tanner's Stage II). Pubic hair was present though the axillary hair was sparse. Examination of the external genitalia revealed that they were of female type and there was no evidence of clitoromegaly. Examination under anesthesia showed that the hymen was intact, the vagina was poorly developed and the cervix was tiny and hypoplastic.

Ultrasonography (USG) of the pelvis revealed a rudimentary uterus and bilaterally ill defined adnexiae. At the time of laparoscopy at a later date these were identified as streak gonads. The serum follicle stimulating hormone (FSH)

level was raised at 45 IU/L. A karyotype repeated from two different laboratories showed a genotype of pure XY (Fig.1).

Patient was taken up for an operative laparoscopic procedure under general anesthesia and a bilateral gonadectomy was performed. The histopathology of the excised gonads showed ovarian stromal tissue. Subsequently the patient was started on hormone replacement therapy (HRT) with conjugated estrogens 0.625mg per day and cyclical medroxy progesterone acetate. Six months after initiation of HRT patient attained menarche with one episode of spotting per vaginum. The secondary sexual characteristics have shown only a marginal improvement.

Discussion

In utero, sexual differentiation follows a sequential pattern. After fertilization there is establishment of the genotype of the embryo and under the influence of the single gene determinant (testes determining factor) on the short arm of the Y chromosome, there is differentiation of the primordial gonads into the testes. The ovaries develop by default, in the absence or non functioning of the Y chromosome. This differentiation of the primordial gonads into the testes or ovary will lead to an alteration of the hormonal milieu of the fetus, which in turn results in the corresponding differentiation of the internal and external genitalia.

We made a diagnosis of Swyer's syndrome because we had a normal statured girl with primary amenorrhoea, with clinical features of sexual infantilism, whose genotype was pure XY and the gonadal tissue showed features of ovarian stromal tissue [1].

In Swyer's syndrome there is a mutation either in the YP11 location of SRY (sex determining region of Y chromosome) [2] or in other genes such as SOX9, DAX1, WT1 or SF1 which can affect testicular differentiation and also inhibit anti mullerian hormone production [3].

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Fig. 1 : Chromosome analysis with GTG banding showed no structural or numerical abnormalities. The karyotype is 46, XY. Y fluorescence positive as detected by Q-banding technique, as shown by the arrow.

The main differential diagnosis of Swyer's syndrome is mixed gonadal dysgenesis which is more frequently seen than the former. In this condition the gonads on histopathology will also show testicular differentiation in addition to ovarian differentiation. The genotype too is usually a mosaic pattern. The incidence of malignant gonadoblastoma in patients with dysgenetic gonads is high (25%) [4] and hence bilateral gonadectomy was

done for this patient.

These patients have a normal life expectancy provided they have undergone bilateral gonadectomy. These patients can have normal sexual relations and theoretically they can conceive using donor oocytes and Artificial Reproductive Techniques. They need to be on lifelong HRT, though it has been observed that in spite of incremental doses of estrogen therapy, development of breast and secondary sexual characteristics tends to be poor.

Conflicts of Interest

None identified

References

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Original Article: Renal Transplantation: Experience at a Single Centre. MJAFI 2009; 65:18-22.

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