46 XX male syndrome: a case report

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Summary

Introduction: 46 XX male syndrome (de la Chapelle syndrome) is a rarely seen genetic disorder causing male infertility. It is generally a result of unequal crossing over between X and Y chromosomes.

Case report: A 26-year-old infertile male was referred to the Urology Department. He had normal external male genital phenotype and secondary sex characters. No gynecomastia was noted. At physical examination soft and atrophic testes were palpated. Laboratory analysis and testis biopsies indicated nonobstructive azospermia. Chromosomal analysis showed 46 XX karyotype.

Conclusion: In the literature, there are various phenotypic properties of 46 XX male patients. Thus, translocation of the sex determining region (SRY) the gene probably cannot be the only reason for XX male syndrome. There might be some other abnormalities leading to de la Chapelle syndrome.

Key words: Genetic infertility; 46 XX male syndrome.

Introduction

Genetic disorders causing infertility can be due to a single gene abnormality or chromosomal deletions and translocations. 46 XX male syndrome (de la Chapelle syndrome) is a rarely seen genetic disorder in males.

Case Report

A 26-year-old male presented to the Urology Department with the complaint of infertility. He and his wife claimed they had used no contraception method during their 19-month marriage. No erection or ejaculation problems were noted. His familial history disclosed two infertile couples with unknown etiology in his cousins.

His height and weight were 165 cm and 72 kg, respectively. Secondary sex characteristics and androgenic hair pattern were appropriate for his age and male phenotype. No gynecomastia was noted. Penile length was measured as 8 cm in detumescence. Testes were soft and atrophic. Prader's orchidometer showed the left testis as 2 cc and the right testis as 3 cc in volume.

Semen analysis indicated azospermia. The semen volume was 3 ml and was fructose positive. Markedly elevated levels of follicle stimulating hormone (FSH) – 45.58 mIU/ml (1.2-5mIU/ml) and luteinizing hormone (LH) – 48.96 mIU/ml (2-9.8 mIU/ml) were measured. Serum total testosterone level (2.7 ng/ml) was close to the lower limit (3.0-10.6 nn/ml) but, prolactin (9.4 ng/ml) was in normal range (2.2-18.5 ng/ml). Chromosomal analysis showed 46 XX karyotype (Figure 1). Leydig cell hyperplasia and seminiferous tubule sclerosis were found at histopathologic examination of the testes (Figure 2).

Discussion

Generally, 46 XX male patients are shorter than average and may have gynecomastia. Mental retardation and hypospadias are frequently seen findings. Various degrees of phenotypic changes can also be seen [1]. The

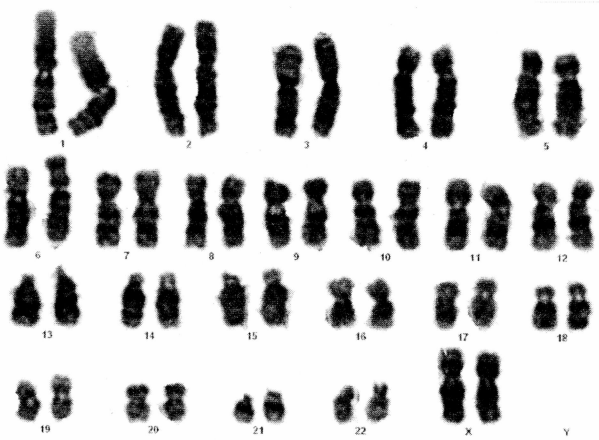

Figure 1. — Karyotype of the patient with 46 XX male syndrome.

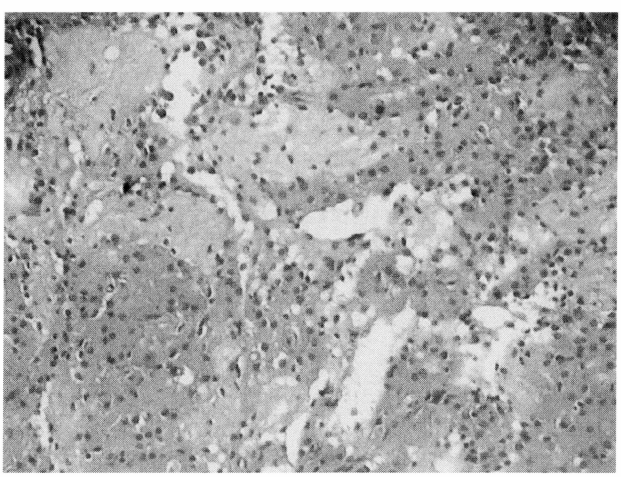

Figure 2. — Testis biopsy of the patient with 46, XX karyotype: Areas of tubular sclerosis and Leydig cell hyperplasia can be seen.

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patient in this report had no phenotypic changes and no findings regarding mental retardation. Soft and atrophic testes of the present patient were the characteristic findings of de la Chapelle syndrome.

46 XX male syndrome is caused by translocation of Y material including sex determining region (SRY) to the X chromosome during paternal meiosis [2]. Normally, existence of sexual determining factor on X chromosome leads to normal male sexual development [3]. Most of the XX male patients have normal external genital development. However, sometimes, anomalies like hypospadia and/or cryporchidism can be seen. Existence of SRY is expected in the case of patients having normal external genitalia.

Due to an abnormal pituitary-gonadal axis, decrease in serum testosterone and high levels of gonadotropins in this report were the same as the literature [1]. Xp 22 or Yq 11.3 locus deletions on the pseudoautosomal region of the sex chromosomes controlling growth have been investigated in patients with short stature. On the other hand, there have been some findings indicating the role of Xq locus on growth hormone control. Consequently, the effect of a chromosomal defect or translocations between sex chromosomes on growth hormone is controversial.

Results

In the literature, there is a broad spectrum of phenotypic and hormonal findings of 46 XX male patients. Thus, it is likely that, translocation of the SYR gene may not be the only cause of XX male syndrome. There might be some other abnormalities causing de la Chapelle syndrome.

References

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