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CASE REPORT

Two successful pregnancies in a 46,XY patient

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Two successful pregnancies (singleton followed by twins) following ovum donation/in-vitro fertilization in a 46,XY woman have been studied. Although similar cases have previously been presented: in a pure XY patient and in a 45,X/46,XY patient, this case is one in which a subsequent successful pregnancy has resulted. In such patients, the rate of Caesarean section appears to be increased, and we postulate that the hypoplastic nature of the uterus, although able to respond quite well to both exogenous and endogenous hormones to accept and maintain a pregnancy, may lack the capability to respond fully in labour by dilating appropriately.

Key words: 46,XY/caesarean section/chromosome abnormality/gondal dysgenesis/hypoplastic uterus/pregnancy

Introduction

Two successful pregnancies (singleton followed by twins) following ovum donation/in-vitro fertilization in a 46,XY woman have been studied. Although similar cases have previously been presented: in a pure 46,XY patient (Frydman *et al.*, 1988; Sauer *et al.*, 1989; Cornet *et al.*, 1990; Bianco *et al.*, 1992) and in a 45,XO/46,XY patient (Bardeguez *et al.*, 1990), we would like to present this case as one in which a subsequent successful pregnancy has resulted. In such patients the rate of Caesarean sections is very high, and we postulate that the hypoplastic nature of the uterus, although able to respond quite well to both exogenous and endogenous hormones to accept and maintain a pregnancy, may lack the capability to respond fully in labour by dilating appropriately.

Case report

This patient was referred to an endocrinologist at the age of 17 years for primary amenorrhoea. She had no signs of menarche, although she did have slight pubic and axillary hair present. Among the investigations was a karyotype on blood lymphocytes, which was 46,XY. A laparotomy done 2 years later confirmed bilateral ovotestes with normal Fallopian tubes on both sides and an infantile uterus. Bilateral gonadectomy was carried out due to the risk of malignancy.

She was treated with oestrogen replacement therapy and underwent normal pubertal physical changes and was on hormonal replacement therapy right up to when she first consulted our unit at the age of 30 years to be considered for oocyte donation. Blood investigations done just prior to our first consultations showed the following results: follicle stimulating hormone, 18.2 IU/l; luteinizing hormone, 6.6 IU/l; testosterone, 0.6 nmol/l. Vaginal ultrasound showed a retroflexed uterus, with a cervico-fundal height of 65 mm, anterio-posterior diameter of 25 mm and a transverse diameter of 35 mm. Endometrium was 8 mm thick on day 10 of her hormonal replacement therapy cycle and no abnormalities were seen in the adnexa. Semen analysis on husband's spermatozoa was normal.

The method used for ovulation induction for donor and cycle monitoring and synchronization with the recipient has previously been described (Abdalla *et al.*, 1990). Our pregnancy results with zygote intra-Fallopian transfer (ZIFT) during that period had generally been better than with uterine embryo transfer in our egg donation programme, and ZIFT was therefore the preferred mode of embryo replacement.

On the first attempt, four oocytes were donated and they were inseminated with husband's prepared spermatozoa. Unfortunately, only one embryo resulted which was transferred by ZIFT the following day. No pregnancy resulted. It was noted at the time of laparoscopy for ZIFT that there were adhesions from bowel to the mid portion of the right Fallopian tube and that the right fimbria was difficult to visualize. The left Fallopian tube and fimbria were healthy and therefore were used.

The second attempt 8 months later was more successful with four out of four eggs fertilized and three embryos transferred into the left Fallopian tube (ZIFT). A transvaginal ultrasound performed 5 weeks later confirmed a single intrauterine sac.

This pregnancy was induced at term due to elevated blood pressure. Her blood pressure was elevated from 33 weeks gestation onwards, but urinalysis showed no proteinuria throughout. A Caesarean section was eventually carried out after failure to induce labour initially with prostaglandin pessaries and then followed by oxytocin i.v. for 24 h. The baby boy weighed 3105 g at birth.

She returned to us to try for another baby 2 years later. Only one egg was collected from the anonymous donor. It

was fertilized with the husband's spermatozoa and transferred back into the uterus 2 days later without ensuing success.

Following that attempt, 8 months later, six eggs were collected, of which two fertilized and both were transferred into the left Fallopian tube by ZIFT the next day. This resulted in twins which were electively delivered by Caesarean section at 36 weeks. The twins, both males, weighed 2203 and 2561 g. Her blood pressure was again noted to be elevated in that pregnancy, but not to a significant extent.

It is of interest to note that this patient's younger sister has exactly the same condition, i.e. 46,XY with bilateral ovotestes.

Discussion

To date, there have been 13 reports of spontaneous pregnancies in women with 45,XO (Turner's syndrome) (Kaneko *et al.*, 1990) but no spontaneous pregnancies so far in a 46,XY patient. Ever since Lutjen *et al.* (1984) reported the first pregnancy and delivery by ovum donation, the number of pregnancies from patients with a karyotype of 45,XO and 46,XY and other forms of gonadal dysgenesis have increased greatly (Cornet *et al.*, 1990). It would appear that the hypoplastic uterus of these women can be stimulated appropriately to accommodate singleton (Frydman *et al.*, 1988), twin (as in this case report) or even triplet pregnancies (Bardeguez *et al.*, 1990).

As this is the first reported subsequent successful delivered pregnancy in a 46,XY patient, it does seem that the uterus is able to accommodate successive pregnancies. If we look at the six reported cases in the literature thus far with regards to pregnancies in 46,XY patients (Frydman *et al.*, 1988; Sauer *et al.*, 1989; Cornet *et al.*, 1990; Bianco *et al.*, 1992) and include the two in ours, five patients had delivered at the time of the reports and all five needed Caesarean sections. One was done electively at term for android-shaped pelvis (Cornet *et al.*, 1990), one at post-term at 42 weeks gestation (Frydman *et al.*, 1988) and the third one as an emergency for sudden rise in blood pressure in a twin pregnancy at 35 weeks gestation (Sauer *et al.*, 1989). Our patient needed a Caesarean section in her first pregnancy for failure to induce and subsequently again in her next pregnancy for the indication of twins and previous Caesarean section. We have performed an audit of the mode of delivery for the patients in our oocyte donation programme (to be published). Out of the 151 women who delivered between 1988 and 1993, we have information on 140 deliveries. The Caesarean section rate for this group is 68.5% (105 singletons, 32 twins and three triplets). At present, the number of pregnancies is too small to speculate as to cause for the seemingly increased number of patients who undergo Caesarean sections. However, we would like to offer the hypothesis that patients with hypoplastic uteri, although able to be stimulated to accommodate a pregnancy, may lack the receptors or the anatomical ability to dilate appropriately in labour, hence leading to a higher Caesarean section rate.

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