A birth of twins—one boy and one girl—from a single embryo transfer and a possible natural pregnancy

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Abstract

Purpose To describe a rare case of a birth of dizygotic twins with different-sex infants from a single embryo transfer.

Methods and results A patient, who had her right ovary and tube removed, and her husband were treated with ICSI and a single embryo transfer. When a single fresh embryo was transferred on day 4, following oocyte retrieval using GnRH agonist-long protocol, two gestational sacs were recognized at 8 weeks of gestation. Healthy twins with a boy and a girl were delivered at 37 weeks 0 days of gestation by a cesarean section. The boy's weight was 2096g, and his height was 45.0cm, while the girl's weight was 1988g, and her height was 41.5cm. Peripheral lymphocyte chromosome analysis of the two infants showed normal karyotype, 46, XY (boy) and 46, XX (girl). **Conclusions** A single embryo transfer could produce different-sex twins.

Keywords A birth · A single embryo transfer (SET) · Dizygotic twins · Different-sex infants · Natural pregnancy

Capsule A birth of dizygotic twins with different-sex infants from a single embryo transfer.

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Introduction

Assisted reproductive technology (ART) has increased pregnancy rates; however, multiple pregnancies have also increased. Due to this, a single embryo transfer (SET) is now recommended to reduce the rate of multiple pregnancies [1]. Even though the number of transferred embryos has decreased, the pregnancy rate has not decreased. However, multiple pregnancies have not fallen to zero percent in spite of SET. Spontaneous monozygotic twins (MZT) occur in about 0.4% of births, and in ART cases MZT occurs 0.72–1.88% of the time [2–4], especially if a blastocyst is transferred [5]. We are making efforts to decrease the multiple pregnancy rate, and recently, SET is the first choice for women under the age of 40.

We experienced a very rare case of dizygotic twins of different-sex who were delivered despite a single embryo transfer.

Case

When the couple first visited our clinic, the woman had had her right ovary and tube removed. On the other hand, her spouse, who was 27 years old, was in a healthy condition. Semen analysis showed normal.

Intracytoplasmic sperm injection (ICSI) was performed in three retrieved oocytes, but the procedure failed. The second time around, twelve oocytes were retrieved, and three became blastocysts and got vitrified. The only blastocyst (grade 4BC) that survived was transferred, and a successful pregnancy was achieved. This resulted in the birth of a healthy 2606 g female infant delivered through Caesarean section.

One year later, the couple visited our clinic again for IVF. Eleven oocytes were retrieved using the GnRH agonist-long protocol, and ten mature oocytes were treated by ICSI, and a compact-morula was transferred on day 4. In our operation room, a single embryo was replaced following our usual witnessing protocol. Two blastocysts were vitrified on day 5, and one blastocyst was vitrified on day 6. We recognized two gestational sacs (GS) with heart beats at eight weeks of gestation. At the time, we believed we had monozygotic twins (MZT), and we clearly recognized two independent GS positions.

At 20 weeks of gestation, we recognized different-sex babies in independent GS under ultrasonography. However, a girl weighing 1988 g and a boy weighing 2096 g were born at gestational 37 weeks 0 days by Caesarean section.

Discussion

This is a very rare birth of twins—a boy and a girl—from a single fresh compaction-morula produced by ICSI. We had to examine why there were two babies of different sex, which meant that it was a dizygotic twin pregnancy. Therefore, our hypothesis is that when a single fresh embryo was transferred during the retrieval cycle, sponta-

neous ovulation before or after the oocyte retrieval also occurred. It is common that some oocytes had been dislodged during follicular aspiration and missed or not retrieved through the needle for IVF. The couple copulated during the same cycle, resulting in production of the dizygotic twins following a single embryo transfer and natural fertilization.

From this case, we may recommend contraception to patients during IVF embryo transfer treatment, to avoid unexpected twin pregnancies.

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