Monozygotic Triplets and a Singleton After ICSI and Day 3 Transfer of Two Embryos

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ABSTRACT

Monozygotic triplets are a rare condition to occur naturally or even in assisted reproductive technologies. In this report, we present a case of monozygotic triplets with a singleton pregnancy following embryo transfer of 2 embryos. To our knowledge, this is the first published case of one singleton and monozygotic triplets after ICSI and transfer of two day 3 embyos in Thailand.

Keywords: In vitro fertilization; monozygotic triplets; intracytoplasmic sperm injection; quadruplets; embryo transfer; pregnancy (Siriraj Med J 2017;69: 214-216)

INTRODUCTION

The risk factors for mononzygotic twins (MZT) are less clear. It has long been a topic of discussion whether ovulation induction[1], all assisted reproductive techniques[2,3], blastocyst culture[4,5] or assisted hatching[6] lead to a higher rate of monozygotic twins and triplets. Another hypothesis discussed the increased incidence of twinning as a function of the presence of more embryos in the uterine cavity after embryo transfer.[7] We report our experience with monozygotic triplets and singleton after ovulation induction and assisted reproductive treatment and transfer of 2 embryos.

CASE REPORT

An IVF-ICSI cycle was planned for a 39 year old patient with tubal sterilization and loss of one child by accident. They refused to do tubal reversal operation. The stimulation was performed with long protocol down regulation cycle starting with GnRHa (Suprefact E®) nasal spray 1 puff 4 times a day from 19 January 2015. After menstruation on 2nd February 2015, the ultrasonography shown that she still had a big follicular cyst diameter 21 millimeters. She was asked to continue GnRHa for nearly another 3 weeks. On the 19th February 2015, the ultrasonography was performed and shown no big follicle. We continued GnRHa and started daily administration of 200 units of recombinant FSH (Puregon pen) started from 20th February 2015 until 26th February 2015. Ultrasonography shown 2 follicles had diameter greater than 17 millimeters. Three follicles had diameters between 10.5 to 14 millimeters and 5 follicles had diameter less than 10 millimeters. Ten thousand units of hCG was injected on 27th February 2015. Seven oocytes were collected from ovum pick up procedure. Five embryos were received from ICSI procedure. After discussion, a decision was made with the couple to transfer two day 3 embryos to the uterus on 4th March 2015 (Fig 1 and 2). Blood beta hCG level was 877 mIU/ml on 16th March 2015. On ultrasonographic scan 5 weeks later, three viable embryos with 3 yolk sacs were observed in one gestational sac and another single viable embryo in another gestational sac. The diagnosis of a viable quadruplet pregnancy was made, comprising dizygotic sacs: a singleton as well as a monochorionic triamniotic (MCTA) pregnancy (Fig 3 and 4). Based on the prospect of a severe complication of pregnancy, the couple decided to have a reduction of the MCTA embryos. After a selective reduction on 29th April 2015, two fetuses in the monochorionic triamniotic sac were

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Fig 1. Day 3 embryo

Fig 2. Day 3 embryo

Fig 3. The triplets in one chorionic sac and part of the singleton chorionic sac.

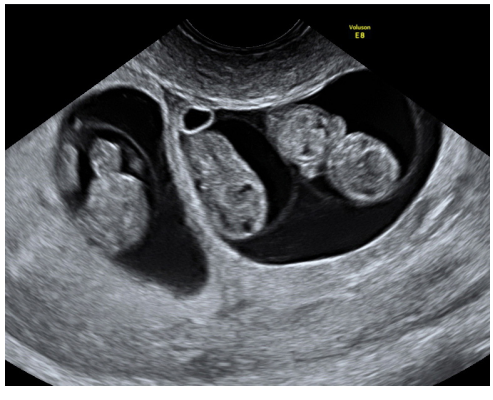

Fig 4. The singleton in one sac and two of the triplets in another sac.

injected with 1 c.c. of KCl. No immediate complication occurred. On the follow up day of 1st May 2015, all three of MCTA had no heart beat. The fetus in the singleton sac was still alive. The couple accepted the result. The antenatal care continued and they received a healthy baby boy weight 3,140 gm. after cesarean section on 11th November 2015. From tracing back, there was no identical twin in both couples family history.

DISCUSSION

To our knowledge, this is the first case reporting quadruplet pregnancy after transfer of only 2 embryos in Thailand. MZT are a relatively rare event in natural conception and are estimated to occur in 0.4% of pregnancies.[8] Monozygotic triplets are a very rare event and may occur in 0.004% of pregnancies.[9,10] With ART treatment, MZT are estimated to occur in 0.7%-13% of all births.[3,5,11-19] Monozygotic multiple pregnancies occur when a single embryo splits before the 8th day after fertilization. Dichorionic, diamniotic gestations may occur when the split happens in the first 3 days after fertilization. Monochorionic, multiamniotic gestation may occur when the split happens between 4 and 8 days after fertilization.[20] If a single embryo splits into monochorionic diamniotic twins between days 4 and 8 after fertilization, and then one of the twins further splits before the 8th day after fertilization, a monochorionic , triamniotic triplet gestation occurs.[21] One other possibility of monozygotic multiple pregnancies happening are caused by multiple openings within the zona pellucida(ZP) and herniation of the trophoblast through those multiple openings.[22] Traditionally, MZT were thought to increase when using older oocytes. However, more recent data demonstrated that MZT occurs more often after fertilization with young oocytes.[3,12,15,17] The incidence of MZT decreased over time.[23,24] They speculated that experience with blastocyst transfers and improved culture conditions influence the decreased incidence of MZT.

In this case, we did an ovulation induction, intracytoplasmic sperm insemination, an assisted reproductive technique but not blastocyst culture nor assisted hatching. The result of selective fetal reduction was accepted by the couple and they have finally got a healthy baby.

CONCLUSION

We reported a case of monozygotic triplets with a singleton pregnancy after embryo transfer of 2 embryos in day 3. This was a rare event. To our knowledge, this is the first published case of one singleton and monozygotic

triplets after ICSI and transfer of two day 3 embryos in Thailand.

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