CASE REPORT

A healthy baby from a cooled incubator

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INTRODUCTION

Assisted reproduction covers two major steps, which are necessary for a successful infertility treatment. The first step is the controlled ovarian hyperstimulation (COH) and the second, which is based on laboratory procedures, and begins from oocyte retrieval and ends with embryo transfer in uterine cavity. However just one break in a chain is enough to split the whole procedure. Unfortunately, during the long way of AR treatment there can be a lot of expected and unexpected threats.

A couple suffering from infertility for 19 years applied to our Assisted Reproduction (AR) Unit. They were evaluated and accepted for an ICSI cycle in our unit. During our routine embryology laboratory procedure of culturing, an unexpected event has occurred. It was possible to cancel the cycle but we continued the treatment and the embryo transfer was done, implantation was achieved and a healthy male baby was born.

We faced an unexpected failure in our incubator due to a problem in the electricity circuits of the online power supplier. The embryos were exposed to stay in a relatively cooled incubator. Although we had this negative condition, we transferred the embryo due to the strong desire and the approval of the couple.

CASE REPORT

A couple (female: 39, male: 41) applied to our unit, with a deep social stress factor especially on the female part, which made her to be in a strong desire for a baby. Routine examinations were done and all evaluations addressed to a healthy male and female, so the couple was accepted for ICSI treatment with the diagnosis of unexplained infertility.

Standard long ovulation induction protocol was preferred for the COH. Lucrine daily 0.1cc. (Abbot, USA), Gonal-F 75IU (Serono, Switzerland), Pregnyl 5000 IU (Organon, Holland) used for medication. After ICSI procedure (day 0, during 02:00 p.m.) 8 oocytes were placed as two oocytes in per 20 microliter medium (IVF-20, VitroLife, Scandinavia) pool under oil at Nunc culture dish, and left for overnight incubation (6.0% CO2, 99.5% humidity, 37.0°C). After 19 hour pronucleus check, the oocytes were placed in G.1.2 (VitroLife,Scandinavia). Unfortunately,
about 11:00 p.m. (on the 36th hours) in the second night, a problem occurred in our electricity line and no one was aware of the situation till 08:30 a.m. (on approximately the 46th hours). At this moment the inside temperature of the incubator (WTB Binder, CB 150, Germany) was recorded as 29.4° C (a standard temperature placed inside the incubator for checking) and the CO₂ was measured by Fyrite as 4.3%. The power line was fixed at 09:10 a.m. and we microscopically observed two embryos at two cell stage. Only one four-cell stage embryo was observed in our second microscopic examination at 04:30 p.m. The couple was called in the late afternoon for discussion. The situation was explained and they were informed that there were not any recorded medical documents on the safety of such an embryo. We advised the couple to cease the process. They asked for a private conversation about the situation with each other and at the end of discussion, they declared that whatever the risk was; as they were the owners of the embryo, they wanted it to be transferred. We obeyed their decision and at 10:30 p.m. (on the 60th hours) one single embryo at 4-cell stage was transferred successfully.

RESULT

Biochemical and clinical markers confirmed the implantation and the gestation. During the antenatal control of the pregnancy, everything was normal. A healthy male baby (51 cm and 3150 gr) was born by caesarian section at the 38th week of gestation. There was not any sign of morphological, neurological and clinical abnormality; the baby is still healthy at his 18 months of age.

DISCUSSION

In this situation the problem was out of the knowledge of the couple and it was easy to say to the couple that no embryos were developed so there would be no embryo transfer and the case file could be closed. As the ART team, we discussed the situation and concluded that we were not the owner of the embryos, in fact, the owner was the couple. So we decided that the correct decision could be made by the owner of the embryo. They insisted to take any risk if existed. Since the woman was in a deep desire to achieve a pregnancy, she played a major role for giving the final decision.

It is accepted that keeping the temperature at 37° C is extremely important for a proper mammalian cell culture system. 37° C is also essential to maintain a stable pH for the culture media. Mammalian cell mitosis is very sensitive to temperature changes because 37.0° C is critical for the polymerization of microtubules that are essential for cell mitosis (1). However in our experience we observed a healthy baby from a healthy pregnancy although there was an evident temperature fall in the incubator during the culturing. So it is possible to perform some new researches on the temperature changes and its effect on the mammalian cell culture.

REFERENCE