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The outcome of assisted reproductive technology (ART) program in different season

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SUMMARY

The present report was to investigate the pregnancy rate of the infertile couples in different season after conventional in vitro fertilization (IVF) and intracytoplasmic sperm injection (ICSI). Pregnancy rates were compared in different season (winter, spring, summer and autumn) of the 412 cycles after following the ART programs in our clinic during September 1995 to August 1996. IVF was done by standard protocol, and ICSI was performed for cases of male factor infertility or history of failed fertilization after IVF. Data of clinical pregnancy were subjected to two groups: a) wives aged less than 35 years old, 253 cycles and b) wives aged more than 35 years old, 159 cycles. The pregnancy rates of non aged and aged patients were lowest in winter (18/58, 31% and 6/33, 18%), increasing in spring (22/56, 39% and 10/44, 23%), reaching maximum in summer (31/73, 42% and 11/45, 24%), and again decreased in autumn (27/66, 41% and 8/37, 22%). However, they were no statistical different among the season. The results showed the tendency of decreased the pregnancy rate in the winter and increased in the summer in the infertile patients after following ART programs.
INTRODUCTION

It has been reported that during the dark season ovarian steroidogenic activity was decreased and luteal phase gonadotropin concentrations are decreased, whereas during the spring increased follicular phase FSH secretion stimulated E2 output (Kauppila et al., 1987). The dominance of pituitary LH secretion, may offer one explanation for the decrease conception rate including increased risk for miscarriage (Regan et al., 1990).

MATERIALS AND METHODS

Ovarian stimulation:
Controlled ovarian stimulation was achieved using either long or short protocol of gonadotropin releasing hormone (GnRH) analogue buserelin acetate (Spoteca; Hoechst Marion Roussel, Tokyo, Japan), human menopausal gonadotropin (hMG; Humegon; Organon, Holland), and pure follicle-stimulating hormone (FSH; Fertinorm P; Serono, Tokyo, Japan). Oocytes were collected 35 to 36 hours after human chorionic gonadotropin (hCG; Profasi; Serono, Tokyo, Japan) was administered.

In Vitro Fertilization:
Cumulus-egg complexes were inseminated with approximately 50,000 motile sperm per oocyte and cultured in HTF supplemented with 10% plasma protein fraction (PFP; Baxter Health care Co., Glendale, CA, USA) at 37°C and 5% CO2, 90% N2, 5% O2. Fertilization was assessed at 18 to 20 hours after insemination.

Intracytoplasmic sperm injection:
Oocyte that developed to metaphase II stage was injected with single, living and immobilized spermatozoon. The oocyte was held securely on the holding pipette in such away that the polar body was situated at the 6 o'clock or at the 12 o'clock position while the injection pipette was pushed through the zona pellucida at the 3 o'clock position into the cytoplasm, where the sperm was delivered.

Evaluation of oocyte integrity, fertilization and embryo formation:
Oocytes were observed 16 to 20 h after the ICSI procedure. Integrity of the ooplasm and the number of pronuclei were recorded. Normal fertilization was defined by the presence of two distinct pronuclei and two polar bodies. Cleavage of the fertilized oocytes was assessed 48 h after injection. A few hours later, three of the morphologically best embryos were transferred into the uterine cavity. Pregnancy was confirmed by detecting serum hCG level two weeks after embryo replacement. Delayed menstruation in itself was not considered a pregnancy criterion.

RESULTS AND CONCLUSIONS

It has been reported by Ronnberg et al. (1990) that the ovarian steroidogenic activity, assessed by serum E2 concentration, was found to be suppressed during the dark (winter) season, associated with increased melatonin concentration in the serum and follicular fluid. Figure 1 and Figure 2 shows the same pattern of the pregnancy rate of non aged and aged women during the season. In the winter, the
Figure 1. Pregnancy rate of the non aged women (≤35 years old) in the ART program during the season.

Pregnancy rates were lowest, increased in the spring, reached maximum in the summer and again decreased in the autumn. Although they are a tendency of decreased the pregnancy rate in the winter and increased in the summer, awaits further determination in the hormone levels (LH, FSH, E2) during the season.

Figure 2. Pregnancy rate of the aged women (>35 years old) in the ART program during the season.

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