Tuesday, October 18, 2005
6:00 p.m.

O-214

WITHDRAWN

Tuesday, October 18, 2005
6:15 p.m.

O-215

A Prospective Randomized Trial Evaluating the Effect of Luteal Phase Estradiol Supplementation on the Success of IVF Treatment. L. Engmann, A. Diluigi, D. Schmidt, C. Benadiva, D. Maier, J. Nulsen. The Center for Advanced Reproductive Services, University of Connecticut Health Center, Farmington, CT.

OBJECTIVE: There are conflicting results regarding the effect of luteal phase estradiol (E2) supplementation on implantation rates. The purpose of this study, therefore, was to evaluate the effect of luteal phase estradiol supplementation on implantation and pregnancy rates in patients undergoing their first cycle of embryo transfer during IVF treatment.

DESIGN: Prospective randomized clinical trial at a tertiary university IVF center.

MATERIALS AND METHODS: All patients under 44 years of age undergoing their first IVF embryo transfer cycle were offered participation in the study. All the patients underwent either the long protocol using luteal phase gonadotropin releasing hormone (GnRH) agonist or GnRH antagonist protocol. Controlled ovarian stimulation was achieved with recombinant follicle stimulating hormone (FSH) followed by the administration of human chorionic gonadotropin (hCG) for final oocyte maturation, oocyte retrieval and day 3-embryo transfer. Patients were randomized into two groups on the day of embryo transfer. Patients in the study group (n=54) received estradiol tablets (estrace, 2mg twice daily) intravaginally, from the day of embryo transfer until positive fetal heart beat on ultrasound or negative pregnancy test. Patients in the control group (n=57) received no estradiol supplementation during the luteal phase. All patients received intramuscular progesterone, 50mg daily, during the luteal phase. The main outcome variables were implantation rates and clinical pregnancy rates. The Chi-square test and t-test were used for categorical and continuous variables respectively.

RESULTS: The mean age of the patients was similar in the study group (35.1 $\pm$ 4.1 years) when compared with the control group (35.5 $\pm$ 4.1 years). There were also no differences in the baseline FSH levels in the study group (6.5 $\pm$ 2.3mIU/mL) when compared to the control group (6.2 $\pm$ 2.3mIU/mL). Patients who underwent the luteal phase GnRH agonist or the GnRH antagonist treatment protocols were equally distributed between the two groups. The mean number of oocytes retrieved (13.4 $\pm$ 6.8 versus 12.9 $\pm$ 6.3), fertilization rate (67.6% $\pm$ 20.9% versus 75.7% $\pm$ 20.8%) and the number of embryos transferred (2.5 $\pm$ 0.8 versus 2.5 $\pm$ 0.7) were similar between the study and the control groups. Serum estradiol on the day of embryo transfer and the percentage decline in serum estradiol from the day of hCG administration to the day of embryo transfer did not differ between the two groups. There were no significant differences in the implantation rate for the study group (38/136, 28%) compared to the control group (45/142, 32%). The clinical pregnancy rate (46.3% versus 61.4%) did not significantly differ between the study and the control groups. There were also no significant differences in miscarriage rates between the study (20%) and the control (16%) groups.

CONCLUSION: The results of this prospective randomized controlled trial suggest that luteal phase estradiol supplementation does not improve implantation rates. Further results from this ongoing trial will be presented at the meeting.

Supported by: None

OUTCOME PREDICTORS-LABORATORY: ART

Tuesday, October 18, 2005
3:45 p.m.

O-216

Choosing the Optimal Incubator Environment for Day 3 Culture: Triple Gas vs. 5% CO2 in Air, A Prospective, Randomized Trial. K. M. Silverberg, T. Turner, T. Minter, C. Schuster, R. Fields, T. C. Vaughn. Texas Fertility Center, Austin, TX; Austin IVF, Austin, TX.

OBJECTIVE: Despite 20 years of experience in IVF, significant controversy persists regarding the optimal incubator environment in which to culture embryos prior to Day 3 transfer. Most of this controversy centers around the percentage of oxygen (O2) in the gas mixture. This study was designed to compare the outcome of embryos grown in triple gas (5% CO2/5% O2/90% N2) (Group 1) to those grown in 5% CO2 in air (Group 2).

DESIGN: Prospective, randomized trial in a large private infertility practice.

MATERIALS AND METHODS: Patients underwent stimulation with GnRH-agonists and recombinant FSH according to our usual stimulation protocols. Transvaginal oocyte retrieval was performed 36 hours after the administration of hCG. Oocytes were inseminated in Sage fertilization medium with 0.5% HSA and cultured to Day 3 in Sage cleavage media with 10% SPS. Patients were randomly assigned to have their embryos grown in either triple gas or 5% CO2 in air. The highest quality embryos were tranferred fresh on Day 3, while high quality supernumery embryos were cryopreserved on Day 3. Remaining embryos that achieved blastulation were cryopreserved on Day 5 or 6. Statistical analysis was performed using t-test and chi square analysis.

RESULTS: 126 patients were stimulated with GnRH-agonists and gonadotropins between October 1, 2004 and February 28, 2005. . There were no differences between the 2 groups in terms of patient age (35.9 vs. 35.4), days of stimulation (11.3 vs. 11.2), total gonadotropin dose (3750 IU vs. 3787 IU), peak estradiol level (2573 pg/mL vs. 2424 pg/mL), or total number of follicles $>$ 10 mm on the day of hCG administration (15.8 vs.15.8). Similarly, there were no differences in the number of oocytes retrieved (17.4 vs. 15.4), the number of 2PN embryos obtained (10 vs. 8.3), the number of embryos that achieved at least 6 or 8 cells on Day 3 (6.8 vs 5.1, 4.1 vs. 2.8), the number of embryos transferred (2.6 vs. 2.5), or the number of embryos frozen (1.7 vs. 1.1). However, the ongoing/delivered pregnancy rate was significantly greater in Group 2 (56.5% vs. 48.4%, $p<0.01$).

	Group 1	Group 2	P value
Patient Age (yrs)	35.9	35.4	0.59
Peak E2 (pg/mL)	2573	2424	0.51
# Oocytes Retrieved	17.4	15.4	0.29
# 2PN Embryos	10.0	8.3	0.19
# Embryos > 6 Cell Day 3	6.8	5.1	0.09
# Embryos > 8 Cell Day 3	4.1	2.8	0.07
# Embryos Transferred	2.6	2.5	0.68
# Embryos Frozen	1.7	1.1	0.22
Ongoing/Delivered Preg/ET (%)	48.4	56.5	<0.01

CONCLUSION: The pregnancy rate for embryos transferred following 3 days of culture in 5% CO2 in air was greater than that for embryos cultured in triple gas. While it appeared that embryos grown in triple gas and 5% CO2 in air performed similarly, as there was no demonstrable laboratory difference in embryonic development or quality, a statistically significant difference in pregnancy rate was observed.

Supported by: None

Tuesday, October 18, 2005
4:00 p.m.

O-217

Gene Expression Profiling of Viable IVF Blastocysts. D. S. Cram, G. M. Jones, B. Song, G. Kokkali, K. Pantos, A. O. Trounson. Monash IVF, Clayton, Victoria, Australia; Monash University, Clayton, Victoria, Australia; Center for Human Reproduction, Genesis Hospital, Athens, Greece.

OBJECTIVE: The vast majority of embryos generated by assisted reproduction technology fail to implant. This failure must be ascribed to the embryo rather than the uterus as it is not uncommon to attain a single implantation following the transfer of more than one embryo of good morphological quality. Current embryo selection criteria are inadequate and confounded by the practice of transferring more than one embryo so that