

bryo quality parameters (day 3 and day 5) were recorded for each cycle. Patients were comparable regarding age, parity, and demographic features.

RESULTS: Results are expressed as median (25th, 75th) percentiles. Day-1 TAC level was significantly higher in sample media 1.4 (0.9, 4.4) compared to the controls 0.0 (0.0, 0.3) P=0.002. After controlling for all demographic and clinical variables, D-1 TAC levels were not related to fertilization rate in both groups of patients. D-1 TAC levels were significantly related to high (>7) day 3 cell number and low (<10%) fragmentation rate in ICSI cycles [P values = 0.04 and 0.01, respectively; (Table)]. Day-1 TAC was not related to in vitro growth parameters and pregnancy in conventional IVF cycles.

CONCLUSION: D-1 TAC level in day 1 culture media appears to be an important biochemical marker for early embryonic growth. TAC levels in day 1 culture media are related with a decreased embryo fragmentation and embryonic arrest in ICSI cycles. Whether this relationship is a cause or effect needs further assessment. Differential growth of ICSI embryos incubated under the same conditions may be due to differences in TAC levels surrounding them.

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Relationship of TAC and the main outcome measures of IVF and ICSI cycles

Outcome	IVF		ICSI	
	Direction of Association	P-value	Direction of Association	P-value
Fertilization rate	-	NS	-	NS
High (>7) day 3 cell number rate	-	NS	+	0.040
Low (<10%) fragmentation rate	-	NS	+	0.019
Blastocyst rate	+	NS	+	NS
Implantation rate	-	NS	+	NS
Clinical pregnancy	+	NS	+	NS

P-176

Success rates from 390 cycles of gonadotropin/IUI in women aged 40 and above. L. C. Yang, S. Klipstein, L. T. Timmreck, S. Galper, M. M. Alper, R. H. Reindollar. Beth Israel Deaconess Medical Center, Boston, MA; Boston IVF, Waltham, MA.

OBJECTIVE: Over the past twenty years, an increasing number of women have chosen to delay childbearing until the fourth and fifth decades of life. Substantial age-related declines in female fertility have been well established. Ovulation induction combined with intrauterine insemination (IUI) is an important treatment modality in this group of women, and often precedes the use of the more expensive assisted reproductive techniques such as IVF. Infertile women 40 years and older are less successful in achieving pregnancy than women under 40, when comparing any individual treatment modality. Previous studies have reported pregnancy rates ranging from 5.4–17.9% for women undergoing gonadotropin stimulation with IUI in this age group. This study presents success rates of 390 cycles of gonadotropin/IUI in 160 women aged 40 years and older.

DESIGN: Retrospective chart review.

MATERIALS AND METHODS: 390 cycles of women undergoing gonadotropin/IUI at Boston IVF between March of 1996 and April of 2003 were reviewed. All patients were between 40.0 and 46.6 years old. The majority of cycles (87.4%) were not downregulated, 10.7% of cycles were downregulated with leuprolide acetate, and in 1.1% of cycles a GnRH antagonist was administered. The remaining cycles utilized OCPs. The following cycle characteristics were analyzed: age of woman, CD3 FSH levels, peak E2 values, number of mature follicles, +hCG, and clinical pregnancy rate.

RESULTS: The clinical pregnancy rate (PR) per cycle start in women aged 40–43 undergoing gonadotropin/IUI was 5.2%, as shown in Table 1. Only 1 pregnancy occurred in 61 cycles above age 44(at age 45). Characteristics of cycles in those women with a clinical pregnancy compared to those not pregnant are shown in Table 2. The loss rate from positive pregnancy to clinical pregnancy approached 50%.

Table 1: Clinical Pregnancy Rates of Gonadotropin/IUI Cycles in Women Aged 40 and Above

Age at Cycle Start (years)	n	Mean CD3 FSH (IU/L)	Mean Peak E2 (pg/ml)	# Mature Follicles	+ hCG n (%)	Clinical* PR n (%)
40	136	8.1	677.5	2.9	14 (10.3)	7 (5.1)
41	76	8.3	549.5	2.7	9 (11.8)	5 (6.6)
42	73	9.7	573.1	2.6	7 (9.6)	3 (4.1)
43	44	10.9	651.9	2.3	2 (4.5)	2 (4.5)
Overall	329	8.9	621.3	2.7	32 (9.7)	17 (5.2)

*Clinical pregnancy is defined by the presence of cardiac activity via transvaginal ultrasound

Table 2: Characteristics of Gonadotropin/IUI Cycles in Women Aged 40 and Above

	+hCG	Clinical pregnancy	Not pregnant
CD3 FSH	7.7	8.1	9.1
Peak E2	818.8	800.9	613.8
# mature follicles	3.4	3.6	2.7

CONCLUSION: An overall clinical pregnancy rate of 5.2% (n=17) was observed in women aged 40–43 years in our cohort. Only one pregnancy occurred beyond age 44. This compares with an IVF pregnancy rate of 15.9% in women aged between 40–43 years at our center. The low success rate of gonadotropin/IUI in this retrospective study raises the question of whether this treatment modality is any better than clomiphene citrate/IUI, and whether IVF is significantly more efficacious than either. This study lends support to our present NIH-sponsored trial (FORTT) comparing the outcomes of these 3 treatment options.

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P-177

Estrogen level for preventing ovarian hyperstimulation syndrome.

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OBJECTIVE: Ovarian hyperstimulation syndrome (OHSS) is a serious complication of infertility treatment. In OHSS, there is a marked elevation in estrogen (E2) levels, which could be associated with a risk of developing the syndrome. The objectives of this study were to assess the E2 value on day 1 and 3 of ovarian stimulation as predictors of risk of developing OHSS, in order to prevent that event.

DESIGN: Retrospective case-control study

MATERIALS AND METHODS: 36 women undergoing assisted reproduction treatment between 23 and 36 years old were included in study; they have been divided in study group (n = 13), which OHSS occurred after ovarian stimulation and control group (n = 23) which didn't presented OHSS. Patients were treated using down-regulation with (GnRH) agonists followed by controlled ovarian stimulation protocol with rFSH. The serum E2 levels were measured by quimioluminescence, on day 1 (before commencing ovarian stimulation) and day 3 of ovarian stimulation. The results of E2 levels were correlated with OHSS occurrence. Statistical analyses were performed using Mann-Whitney and Logistic Regression, with p < 0.05 considered statistically significant.

RESULTS: The mean (SD) E2 levels on day 1 of stimulation, were similar between groups (54.00 pg/ml ± 17.17 and 63.57 pg/ml ± 34.36, p = 0.633; in study and control groups, respectively). On day 3, 85% of patients on study group presented E2 levels higher than 300 pg/ml, and on control group only 35% of patients showed it, moreover the mean (SD) E2 level was significantly higher in study group (464.46 pg/ml ± 202.78) than control group (218.27 pg/ml ± 111.62) (p < 0.001). It was also evaluated the reason between mean of E2 levels on day 3 and day 1, and we could observe that in study group, the mean reason (8.87 ± 4.11) was higher than control group (3.52 ± 1.96) (p < 0.001). With that results, it have been created an equation to calculate the probability of women, undergoing this kind of ovarian stimulation, of having OHSS according to the serum E2 levels on days 1 and day 3 of ovarian stimulation. This equation was tested in our samples and shown 94.8% of correct prediction. The equation is: $Y = \exp^{-2.155 - (0.0822 \times D1) + (0.022 \times D3)} / 1 + \exp^{-2.155 - (0.0822 \times D1) + (0.022 \times D3)}$

Legend: Y = percentage of risk for OHSS exp = exponential D1 = E2 levels on day 1 of ovarian stimulation D3 = E2 levels on day 3 of ovarian stimulation.

CONCLUSION: We thought that, if E2 levels on day 3 have been higher than 300 pg/ml, and if the reason between day 3 and day 1 has been higher than six, women are at high risk for OHSS. These results associated with the equation have been shown the probability of women having OHSS earliness, in as much as, it is possible to modify the gonadotropins dose in according to the probability results earlier due to safety and ethical concern, avoiding an OHSS occurrence. Additional studies are required to support the E2 levels value to prevent OHSS, using other ovarian stimulation protocols.

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P-178

Improved implantation and pregnancy rates in donor recipients using transdermal hormone replacement therapy. A. Criniti, G. Chow, L. Craig, A. Khabani, A. Thyer, L. Scott. University of Washington, Seattle, WA.

OBJECTIVE: To review donor recipient cycles utilizing intramuscular versus transdermal estrogen as hormone replacement therapy (HRT).

DESIGN: Retrospective analysis of donor recipient cycles at a university based IVF program.

MATERIALS AND METHODS: Donor recipient cycles in 2002 (n=47) and 2003 (n=48) were compared. In 2002, the HRT protocol consisted of intramuscular (IM) estradiol valerate. Patients were started on 2mg, with the dose increased by 2mg every 3 days to a maintenance dose of 5–6 mg IM twice weekly. In 2003, the protocol was changed to a transdermal system utilizing estradiol 0.1mg patches. One patch was applied and changed every other day for one week. Patches were then increased every other day to reach a maintenance dose of 4 patches. In 2003 all patients also completed a mock cycle prior to the transfer cycle. Implantation rate was defined as the number of fetal heartbeats divided by the number of embryos transferred. Clinical pregnancy rate was defined by the presence of a fetal heartbeat on ultrasound. Highest embryo quality was defined as an 8 cell quality 1 embryo for day 3 transfers (Cornell criteria), or an AA blastocyst for day 5 transfers (Gardner criteria). Chi-square and Student's t-test were used for statistical analyses.

RESULTS: All laboratory protocols were constant during the two year interval. There were no significant differences in number of embryos transferred (2.06 vs 1.88) or blastocyst formation rates (52% vs 51%). There was a trend toward more blastocyst transfers in 2003 (58.3%) compared to 2002 (44.6%) but this was not statistically significant (p=0.183). Implantation rates were higher in 2003 than in 2002 (62.2% vs 40.2%, p<0.05). Pregnancy rates were also higher in 2003 than in 2002 (81.2% vs 53.2%, p<0.05). Donor recipients in 2003 had an embryo of highest quality more often than patients in 2002 (72.9% vs 51.1%, p<0.05). There were no differences in endometrial thickness or pattern among donor recipients during the 2 year period. However, donor recipients in 2003 had significantly lower peak estradiol levels than in 2002 (522 vs 798, p<0.001).

CONCLUSION: Implantation and clinical pregnancy rates for donor recipient cycles were significantly higher in 2003 compared to 2002. Factors associated with improved outcome included better embryo quality and lower peak estradiol levels. HRT protocols utilizing mock cycles and transdermal estrogen should be considered for donor recipient cycles.

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Donor Recipient Cycles 2002 and 2003

Donor Cycles	Average Number of Embryos Transferred	Implantation Rate	Pregnancy Rate	Twin Rate	Patients with highest quality embryo
2002 (n=47)	2.06	40.2% D3 31% D5 52%	53.2% D3 42% D5 67%	56%	51.1%
2003 (n=48)	1.88	62.2% D3 52% D5 71%	81.2% D3 75% D5 86%	41%	72.9%

Donor Cycle Characteristics 2002 and 2003			
Cycle Characteristics	2002 (Mean +/-SEM) n=47	2003 (Mean +/-SEM) n=48	p Value
Age Recipient (years)	42.81 +/- 0.64	42.43 +/- 0.81	NS
Age Donor (years)	26.98 +/- 0.67	26.73 +/- 0.56	NS
Total Gonadotropins IU	2160 +/- 101.2	2309 +/- 132.9	NS
Day HCG	10.11 +/- 0.173	10.21 +/- 0.202	NS
Oocytes (number)	15.8 +/- 0.49	16.7 +/- 0.63	NS
Peak E2 donor (pg/mL)	2478 +/- 164.9	2725 +/- 202	NS
Endometrium Recipient (mm)	9.9 +/- 0.463	9.9 +/- 0.31	NS
Peak E2 Recipient (pg/mL)	798 +/- 52.04	522 +/- 48.68	p<0.001

P-179

Towards a single blastocyst transfer in a medium sized assisted reproductive technology program. W. H. Kutteh, L. Lundquist, R. W. Ke. Fertility Associates of Memphis, Memphis, TN.

OBJECTIVE: To evaluate the ability of a medium-sized assisted reproductive technology program to offer single blastocyst transfer. We hypothesized that women who had at least one blastocyst of grade AAA, AAB, or ABA using inner cell mass, trophoblast development, and blastocoele cavity would be candidates for a single blastocyst transfer without a significant decrease in pregnancy rate.

DESIGN: Prospective study of 60 women in a private practice assisted reproductive technology program. Women were undergoing their first cycle of in vitro fertilization were eligible for this study if they were less than 35 years of age, had a day 3 FSH value of less than 10 mIU/ml, had a day three antral follicle count of at least 10 follicles from 3 to 6 mm, and consented to the transfer of a maximum of two blastocysts on day 5 after retrieval.

MATERIALS AND METHODS: All women were treated with the standard long protocol. Once down regulation was achieved with oral contraceptive pills and leuprolide acetate, ovulation induction was initiated with gonadotropins using a mixed protocol (150 IU of recombinant FSH and 75 IU of urinary FSH/LH. hCG was administered when at least two follicles achieved 18mm in mean diameter and oocyte retrieval occurred 35 to 36 hours later. Embryo culture went to the blastocyst stage using sequential media G1.2 and G2.3. Women were divided into two groups based on blastocyst grade. Blastocysts were graded with a triple code with A=best and D=worst using inner cell mass, trophoblast development, and blastocoele cavity development as the criteria. All women had the transfer of two blastocysts under ultrasound guidance using a Wallace catheter. Implantation rate, ongoing and/or delivered pregnancy rate, and twinning rate were evaluated.

RESULTS: Women in group A with blastocysts graded AAA, AAB, or ABA had an implantation rate of 71.2% and an ongoing pregnancy rate of 78.8%. Twin pregnancy rate in this group was 61.5%. We compared this to women in group B who the transfer of two blastocysts graded BAA, BBA, BAB or BBB. They had a implantation rate of 42.6% with an ongoing or delivered pregnancy rate of 55.6%. Twinning rate in group B was 33.3%. We calculated that at least 61% of women in Group A would have achieved a singleton pregnancy if we had only transferred one grade A blastocyst.

SUCCESS RATE BASED ON STRICT BLASTOCYST GRADING

	GROUP A BLAST GRADE A	GROUP B BLAST GRADE B	p VALUE
Number of Patients	33	27	NS
Implantation Rate	47/66 = 71.2%	23/54 = 42.6%	p < 0.05
Pregnancy Rate	26/33 = 78.8%	15/27 = 55.6%	p < 0.05
Twinning	16/26 = 61.5%	5/15 = 33.3%	p < 0.05

CONCLUSION: Using a strict blastocyst grading system in a selected group of women undergoing in vitro fertilization, it is feasible in a medium sized program to offer single blastocyst transfer. This can be achieved without a significant decline in the implantation rate or delivery rate. This will result in a significant decline in the multiple pregnancy rate of twins.

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P-180

The use of vaginal sildanefil in patients with poor endometrial response: The Mexican IVF experience. J. Chanona, M. García, L. Ruvalcaba, A. Bermúdez, M. Beltrán, S. Cuneo. Instituto Mexicano de Infertilidad,