	Group 1	Group 2	p value
Patient Age (yrs)	34.6	34.3	0.3
Days of Stimulation	11.4	11.6	0.23
Total FSH Dose (units)	3253	3038	0.18
Number of injections	11.4	23.1	<0.01
Peak E2 (pg/mL)	2645	2646	0.5
# Oocytes Retrieved	17.8	16.0	0.08
# Embryos Transferred	2.5	2.4	0.18
# Embryos Frozen	1.3	1.5	0.18
Medication cost ($)	2060.23	1955.31	
Sono-guided ET cost ($)	0.0	307.18	
Ongoing/Delivered Preg/ET (%)	62.6	54.6	0.3

RESULTS: There were no differences between the 2 groups in terms of patient age, days of stimulation, total FSH dose, or peak estradiol level. Similarly, there were no differences in the number of oocytes retrieved, the number of embryos transferred, or the number of embryos frozen. Ongoing/delivered pregnancy rates were also similar. Group 2 patients did receive significantly more injections ($p<0.01$) and, although the total gonadotropin cost was lower in Group 2 ($1955.31 vs. $2060.23), this difference was offset by the additional expense ($307.18) incurred with the sono-guided ET.

CONCLUSION: Normal responders undergoing IVF responded similarly to recombinant FSH alone and combination r-FSH and hMG. While stimulation parameters did not differ significantly, patients receiving combination therapy paid approximately $105 less for their medications, but required twice as many injections. Although Group 2 patients had their ETs performed using ultrasound guidance, which added approximately $307 to the cost of their cycle, the pregnancy rates were not statistically different between the two groups. Neither the addition of urinary gonadotropin nor the routine use of ultrasound guided ET appears to increase ongoing pregnancy rates.

Supported by: None

P-826

GONADOTROPIN-RELEASING HORMONE ANTAGONISTS: A FIRST LINE OVARIAN STIMULATION PROTOCOL FOR IVF? D. A. Conway, S. Talebian, N. Noyes, L. C. Krey, J. A. Grifo. NYU, New York, NY.

OBJECTIVE: Gonadotropin releasing hormone (GnRH) antagonists have been increasingly used to provide hypothalamic suppression in IVF cycles over the past 5 years. This study examines in good prognosis patients whether antagonist protocols generate equivalent implantation rates (IR), pregnancy rates (PR), and live birth rates (LR) comparable to GnRH agonist down-regulated protocols. Such an outcome would support the use of GnRH antagonist in first line ovarian stimulation protocols for IVF.

DESIGN: Retrospective case control study with institutional review board approval at a University-based IVF program.

MATERIALS AND METHODS: From 2003 to 2005, 62 patients (<37 years) with no prior IVF cycles underwent an antagonist cycle on the basis of their clinical history and physical exam. Patients with polycystic ovarian syndrome or diminished ovarian reserve secondary to an oophorectomy were excluded. Gonadotropins were started on day 2 when FSH $<$ 12 mIU/mL, estradiol (E2) $<$ 75 pg/mL, and no ovarian cysts were noted by sonography. Antagonist was initiated when serum E2 levels exceeded 1000 pg/mL and/or lead follicle diameter exceeded 13 mm. The control group ($n=185$) had the same inclusion criteria but were down regulated with leuprolide beginning on day 21. Randomization was performed using a random number table to choose 3 age matched patients for each patient in the antagonist group. Cycles were evaluated for the number of oocytes retrieved, IUs gonadotropins used, and IR, PR, and LR.

RESULTS: Mean gonadotropin use was the same in antagonist and agonist cycles, (2427 ± 169 vs. 2467 ± 53 IU, $p=0.96$). Fewer oocytes per cycle were retrieved in the antagonist group than in the agonist group (11.5 ± 0.8 vs 15.6 ± 0.5, $p<0.001$). The number of embryos transferred per cycle was the same in the two groups (2.2 ± 0.1 and 2.2 ± 0.1, $p=0.98$). IR and PR were not significantly different in the antagonist group ($p=0.47$ and $p=0.65$, respectively in Table 1). LR did not differ significantly between the two groups ($p=0.47$).

Antagonist vs Agonist Outcomes

	Antagonist group	Agonist group
IR (%)	37.3	41.4
PR (%)	51.6	56.0
LR (%)	37.5	44.6
	P > 0.05 for each group above	

CONCLUSION: GnRH antagonists were introduced to clinical practice 5+ years ago. Nonetheless, many centers reserve these protocols for patients with a poor prognosis or who have failed down-regulated leuprolide cycles. With few injections and side effects, antagonists are appealing. Although several studies have suggested lower PRs in antagonist vs agonist cycles, these studies did not look at first time, good prognosis patients. Our retrospective data indicate that, when this patient group is examined, there is no significant difference in IR, PR and LR when antagonist and agonist treatment protocols are followed. A randomized, prospective controlled trial comparing the two protocols should be performed in order to determine whether the two protocols generate comparable outcomes.

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P-827

GONAL F-RFF VS. GONAL F MULTI-DOSE FOR IVF STIMULATION: A PROSPECTVE, SEQUENTIAL TRIAL. K. M. Silverberg, T. L. Minter, R. Basuray. Texas Fertility Center, Austin, TX; Serono, Inc., Boston, MA.

OBJECTIVE: Several previous studies have suggested efficiency differences for different formulations of Gonal F. It has also been suggested that fill by mass technology should attenuate or eliminate these differences. This study was designed to compare the outcomes achieved with the use of Gonal F multi-dose and Gonal F-RFF for IVF stimulation in normal responders.

DESIGN: Sequential trial of two different formulations of recombinant FSH in a large private infertility practice.

MATERIALS AND METHODS: 109 normal responders undergoing IVF with Gonal F multidose or Gonal F-RFF were included in this trial. All patients were stimulated with our standard oral contraceptive/leuprolide acetate down-regulation protocol. R-hCG was administered when the largest follicle achieved a mean diameter of 20 mm, and transvaginal oocyte retrieval was performed 36 hours later. 57 patients were stimulated with Gonal F multidose (Group 1), while 52 received Gonal F-RFF (Group 2). Statistical analysis was performed using ANOVA, Wilcoxon sign-rank testing, and Chi Square analysis.

RESULTS: There were no differences between the 2 groups in terms of patient age, days of stimulation, or starting FSH dose. Similarly, there were no differences in peak E2 levels, total number of oocytes retrieved, or number of embryos transferred. Group 2 patients required significantly less gonadotropin, they had more mature follicles on the day of hCG administration, and ongoing/delivered pregnancy rates were significantly greater in Group 2 as well.

	Group 1	Group 2	p value
Patient Age (yrs)	32.9	32.5	NS
Days of Stimulation	11.0	11.2	NS
Starting Dose (units)	314.5	310.1	NS
Total FSH Dose (units)	3407	2826	<0.05
Peak E2 (pg/mL)	2446	2902	NS
# Follicles > 15 mm	7.3	9.0	<0.05
# Follicles > 19 mm	2.7	2.0	<0.05
# Oocytes Retrieved	16.5	18.8	NS
# Embryos Transferred	2.6	2.6	NS
Ongoing/Delivered Preg/ET (%)	45.6	71.1	<0.05

CONCLUSION: Gonal F-RFF appears to be more efficient than Gonal F multidose, as Group 2 patients required significantly less gonadotropin to achieve follicular maturity. In addition, Group 2 patients had significantly more mature follicles on the day of hCG administration. Group 2 peak estradiol levels and the number of retrieved oocytes were also clinically significantly higher, although neither difference achieved statistical significance. Finally, Group 2 patients experienced significantly higher pregnancy rates. While this difference is more difficult to attribute to medication alone, based on the patient response to stimulation, it appears that Gonal F-RFF is more efficient than its predecessor.

Supported by: Data analysis, Serono, Inc.

P-828

OOCYTE QUALITY AND IMPLANTATION OUTCOMES ARE RELATED TO THE LENGTH OF STIMULATION AND OF ANTAGONIST USE IN PATIENTS USING GNRH-ANTAGONIST FOR ART CYCLES. L. Detti, D. R. Ambler, F. D. Yelian, M. Kruger, M. P. Diamond, E. E. Puscheck. Wayne State Univ., Detroit, MI.

OBJECTIVE: To evaluate whether oocyte quality, implantation and pregnancy outcomes in patients undergoing ovulation induction for assisted reproduction techniques with GnRH-antagonist for pituitary downregulation are related to the length of stimulation and of antagonist use.

DESIGN: Retrospective cohort study.

MATERIALS AND METHODS: 128 women undergoing conventional IVF/ICSI cycles from March 2003 to December 2005. All patients underwent ovarian stimulation with gonadotropins and gonadotropin releasing hormone (GnRH)-antagonist for pituitary downregulation. Patients were started on oral contraceptives one month prior to the stimulation. Gonadotropins were administered from stimulation day 1 until the day of the hCG trigger, and GnRH-antagonist was added from the day when at least one follicle reached 14 mm in diameter and continued until hCG administration. Estradiol peak and endometrial stripe (by two-dimensional ultrasound) were both measured on the day of hCG trigger. We used Pearson correlations to predict whether the length of stimulation, the length of GnRH-antagonist use, or both, would influence oocyte quality, implantation rates, and pregnancy rates.

RESULTS: The table describes the characteristics of the study patients. Pearson correlations showed a negative relationship between length of ovarian stimulation and length of GnRH-antagonist administration with the number of retrieved oocytes ($r=-0.2$, $p=0.02$), mature oocytes ($r=-0.2$, $p=0.02$), number of fertilized oocytes ($r=-0.2$, $p=0.04$), and implantation rate ($r=-0.4$, $p=0.01$).

Table: Characteristics of the study population (n=128 patients).

Variable	Mean±SD	Range
Age (years)	33.8±4.6	25-45
Total FSH dose (IU)	5,101±3,737	938-17,025
No. antagonist days	4.8±1.1	3-9
Length of stimulation (days)	10.9±1.7	7-15
Day 3 FSH (mIU/mL)	6.3±3.7	1.0-13.3
Estradiol on hCG day (pg/mL)	2,416±996	606-5,668
Endometrial stripe (mm)	10.3±2.2	5-17
Total no. of follicles >14 mm	10.4±5.5	3-41
No. oocytes retrieved	14.9±9.0	1-45
Mature oocytes	11.6±7.3	1-41
Immature + atretic oocytes	3.1±4.1	0-24
No. of fertilized oocytes	7.6±5.0	0-29
No. embryos transferred	2.7±1.0	1-6
Pregnancy rate (%)	52%	-
Implantation rate* (%)	54.3%	-
Miscarriage rate** (%)	29%	-
Ongoing pregnancy rate (%)	32%	-

* = No. of gestational sacs/No. of embryo transferred per cycle x 100
**= No. miscarriages and biochemical pregnancies/No. pregnancies

CONCLUSION: The length of stimulation and of GnRH-antagonist administration had a negative relationship with oocyte quality and implantation rate.

Supported by: None.

P-829

USE OF GNRH ANTAGONISTS IN EGG DONATION CYCLES IS ASSOCIATED WITH REDUCED SERUM ESTRADIOL AND LH LEVELS COMPARED TO AGONIST CYCLES WITH AND WITHOUT LH SUPPLEMENTATION, BUT HAS NO EFFECT ON IMPLANTATION OR PREGNANCY RATES. C. Adams, J. Juanengo, L. Anderson, S. Wood. Reproductive Sciences Center, La Jolla, CA.

OBJECTIVE: There are several practical advantages to the use of GnRH antagonist (GnRH-ant) in egg donation cycles, but persistent concerns about the potential detrimental effect of antagonists on clinical outcome has kept this type of protocol from gaining widespread acceptance. The aim of this study was to compare cycle stimulation characteristics from GnRH-ant cycles with those utilizing a GnRH agonist (GnRH-a) with or without LH supplementation to investigate the potential relationship of these parameters to clinical outcome.

DESIGN: A retrospective study of data from 80 completed oocyte donor cycles performed between August 2004 and December 2005 in a private IVF clinic.

MATERIALS AND METHODS: Oocyte donors (mean age: 24±2.9, range 19-31y) underwent ovarian stimulation with one of three protocols: (1) a flexible-start GnRH-ant (cetrorelix, Cetrotide) protocol with FSH and LH containing gonadotropins after oral contraceptive pretreatment (n=24), (2) the standard GnRH-a (leuprolide acetate, Lupron) long protocol with FSH only (n=19), and (3) GnRH-a long protocol with FSH and LH (n=37). Donors received recombinant FSH (Gonal-F), 150-225 IU/day starting day 3 of the cycle, with or without hMG (Repronex or Menopur), 75-150 IU/day starting day 3 of stimulation. Cycles were monitored by ultrasound and hormonal levels with gonadotropin doses adjusted accordingly. GnRH-ant was commenced when the lead follicle was 12-14 mm. HCG was administered when at least two follicles had a mean diameter of 18 mm. Clinical and laboratory parameters were recorded. Data were analyzed using ANOVAs and chi-squares as appropriate.

RESULTS: Mean days of stimulation, total units of FSH, number of large follicles, number of oocytes retrieved, fertilization rates and cleavage rates were comparable among the three stimulation regimens. Mean day of hCG serum LH levels were significantly higher in GnRH-a cycles without LH supplementation (GnRH-a no LH) as compared to GnRH-a + LH and GnRH-ant cycles + LH (4.6 vs. 2.8 and 0.6 mIU/ml respectively). Mean day of hCG estradiol (E2) levels were significantly higher in GnRH-a + LH cycles as compared to GnRH-ant cycles and approached significance when compared to GnRH-a no LH cycles (3199 vs. 2459 vs. 2726 pg/ml, respectively). There was a non-significant trend towards higher progesterone levels on the day of hCG in the GnRH-a + LH group (2.6 ng/ml) as compared to the other two groups (both 1.7 ng/ml). Although the mean percent of highest quality cleavage stage embryos was higher in GnRH-a no LH compared to GnRH-a + LH and GnRH-ant cycles (63% vs. 48% vs. 44% respectively), there was no significant difference in pregnancy and implantation rates between the three protocols, with overall pregnancy and implantation rates (76% and 58%).

CONCLUSION: Oocyte donors treated with a GnRH-ant protocol have decreased serum LH levels on the day of hCG as compared to agonist containing protocols, even with LH supplementation. Estradiol levels were also significantly lower in the GnRH-ant group as compared to the GnRH-a + LH group. However, since implantation and pregnancy rates were not decreased, the hormonal differences seen in the GnRH-ant do not appear to be clinically significant.

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