

logic abnormalities in the late follicular (FP) and early luteal phases (LP) of women with endometriosis.

**Design:** Women with moderate and severe endometriosis (n = 6) and fertile controls (n = 4) were studied in a single menstrual cycle for the presence of urinary luteinizing hormone (uLH), ultrasound (U/S) evidence of ovulation and serum levels of LH(sLH), 17- $\beta$  estradiol(E) and progesterone(P).

**Materials and Methods:** Monitoring began 4 days prior to expected ovulation and was continued for 9 days after the LH surge. The daily hormonal data were normalized around the day of first detected uLH surge (LHO). The U/S criteria for ovulation were the presence of at least 2 of the following: decrease in follicular diameter, free fluid in the cul-de-sac and/or the appearance of intrafollicular echoes. P secretion was compared using Integrated P(IP) defined as the sum of daily P levels on LH+1-7, and the day of peak P. Periovulatory events were compared using peak sLH, integrated LH(ILH) defined as the sum of sLH over 3 days (LH-1,0, + 1), peak E and E at uLH surge. Values were compared using the Student's t-test and Mann-Whitney test where appropriate, (\*p<.05 was considered significant).

**Results:** There were no differences between the 2 groups with regard to age, cycle length or duration of LP or FP. However, women with endometriosis exhibited more variation in both the FP length (Range 10-20 vs 10-12 days) and the day of LH surge (Range = 9-20 vs 10-12). Abnormalities in ovulation are suggested by significant differences in peak E, E at uLH surge, ILH, peak sLH and U/S findings. The mean follicular diameter at LH surge was smaller in women with endometriosis (16.5  $\pm$  5 vs 20  $\pm$  .5 mm) and only  $\frac{1}{6}$  women with endometriosis had evidence of follicular rupture compared to  $\frac{4}{4}$  of the controls. P production is delayed in women with endometriosis with the day of peak P occurring 2 to 4 days later than in controls.

	Peak P (ng/ml)	IP (ng/ml)	Day of Peak P
Endo	11.8 $\pm$ 3	39.5 $\pm$ 3	LH + 7 $\rightarrow$ +9*
Control	9.9 $\pm$ .8	40.8 $\pm$ 2	LH + 5
	Peak E (pg/ml)	E at LH Surge	
Endo	262 $\pm$ 97*	219 $\pm$ 97*	
Control	185 $\pm$ 47	151 $\pm$ 35	
	ILH (IU/ml)	Peak LH (IU/ml)	
Endo	72 $\pm$ 30*	41 $\pm$ 15*	
Control	44 $\pm$ 17	27 $\pm$ 9	

**Conclusions:** We conclude that women with moderate to severe endometriosis display a variety of abnormalities associated with ovulation and luteinization. This may be a factor in the pathogenesis of endometriosis-related infertility by disrupting the normal hormonal transition from

the FP to the LP with resulting abnormalities in oocyte release and P production.

## P-169

### **Doppler Blood Flow Studies Are of Limited Value in Assessing Ovarian Viability Following Torsion.**

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**Objectives:** Adnexa sparing is appropriate if viability is noted following torsion intraoperatively. Our purpose was to determine whether preoperative assessment of doppler blood flow helps predict adnexal viability compared to clinical impressions intraoperatively.

**Design:** A retrospective study in a major university medical center.

**Materials and Methods:** A chart review searching for reproductive aged women having an oophorectomy for adnexal torsion following preoperative doppler blood flow exam was carried out. Eleven such women were identified. All underwent doppler blood flow with either the ATL 3000 or the Toshiba 270A ultrasound device preoperatively. Following the ultrasound exam, these 11 patients underwent oophorectomy and the surgeons recorded their impression regarding the status of adnexal viability. Excised adnexa were evaluated by a pathologist without knowledge of the blood flow studies prior to surgery. Sensitivity, specificity, predictive value and efficiency of doppler blood flow and adnexal appearance were calculated to test the accuracy of these in assessing viability of the ovaries following torsion.

	Doppler Blood Flow	Adnexal Appearance
Sensitivity	78%	63%
Specificity	50%	67%
Predictive value (+) test	78%	83%
Predictive value (-) test	82%	63%
Efficiency	64%	73%

**Conclusions:** In summary, our data illustrate assessing ovaries for viability following torsion is difficult. Doppler blood flow studies do not help in predicting adnexal viability. Neither doppler ultrasound evaluation or clinical impression are definitive in evaluating ovarian viability following torsion.

## P-170

### **Triggering Ovulation With GnRH Agonist, to Avoid Ovarian Hyperstimulation, Frequently Results in Profound Corpus Luteum Insufficiency.**

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**Objective:** To assess the quality of corpus luteum function subsequent to triggering of ovulation with GnRH Agonist (GnRH-a) in patients at very high risk for ovarian hyperstimulation syndrome (OHSS).

**Design:** Retrospective analysis of anovulatory women who have received GnRH-a in lieu of hCG. The study was performed at an academic medical center and its private office.

**Material and Methods:** Twenty patients throughout twenty-one ovulation induction cycles participated in the study. All women have received GnRH-a at mid cycle in the form of Lupron .6 mg s.c. ten hours apart. The ensuing luteal function was assessed by serum progesterone, ultrasound assessment of ovarian size and endometrial transformation as evaluated by the pattern of endometrial echogenicity. Additional parameters included presence and degree of OHSS, clinical outcome, and demographical data.

**Results:** Mean age of the patients was  $30.4 \pm 4.0$  years (range 24-38). Eighteen of twenty patients were diagnosed with PCOD, one with hypothalamic amenorrhea, and one with congenital adrenal hyperplasia. The mean baseline FSH was  $5.3 \pm 1.6$  IU/L (range 2.3-8.7), mean duration of infertility  $2.8 \pm 2.0$  years (range 1-9). Mean number of small follicles (<10 mm) was  $14.2 \pm 14.2$ . Average of  $13.2 \pm 11.1$  intermediate follicles were present while  $4.0 \pm 2.9$  large (>16mm) follicles were detected. Peak estradiol level was  $2,610 \pm 1,248$  pg/ml. GnRH-a was given on cycle day  $14.7 \pm 3.6$  (range 10-22). The mean daily Metrodin dose was  $2.0 \pm 0.9$  amps (range 1-4), and the total Metrodin dose was  $21.7 \pm 12.3$  amps (range 9-59). In all but one patient, progesterone levels have at least doubled after GnRH-a, and endometrial pattern transformation occurred, consistent with ovulation. Nevertheless, presupplementation progesterone was less than 5 ng/ml in six patients. There were six clinical pregnancies (28.6%), however, no OHSS of any degree occurred, despite the high risk. In one particular patient, serum progesterone dropped to 2.4 ng/ml coinciding with serum hCG of 4.5 IU/L, and vaginal bleeding. Upon reinstatement of luteal phase progesterone supplementation the pregnancy had continued and resulted in a healthy term delivery.

**Conclusions:** GnRH-a used in lieu of hCG in women who are at high risk for OHSS allows for ovulation and pregnancy while eliminating the risk of OHSS. Because of very high prevalence of deficient luteal function, (28.6%) there is universal need for luteal progesterone supplementation.

## P-171

**Single-Dose Methotrexate for Ectopic Pregnancy: A Six Year Institutional Experience.** <sup>1</sup>L. J. Lo, <sup>1,2</sup>M. A. Henry, <sup>1,2</sup>W. L. Gentry. <sup>1</sup>Methodist Hospital of Indiana, Inc., Indianapolis, IN; <sup>2</sup>Advanced Fertility Group, Indianapolis, IN.

**Objective:** Our goal was to evaluate the safety and efficacy of single-dose intramuscular methotrexate for the treatment of unruptured ectopic pregnancies.

**Materials and Methods:** A retrospective chart review was performed on all patients initially treated with intra-

muscular single-dose methotrexate (50 mg/m<sup>2</sup>) for unruptured ectopic pregnancies at our institution between September 1990 and May 1996. The first 61 patients have been previously reported (Henry and Gentry, J. Obstet. Gynecol. 1994; 171:1584-7). The diagnosis of ectopic pregnancy was established by history, physical examination, serial serum hCG levels, and transvaginal ultrasonography. Exclusion criteria included ectopic pregnancy >3.5 cm in diameter, fetal cardiac activity, and declining pretreatment serum hCG levels. Comparisons were made with the Fisher's Exact test.

**Results:** During the study period, 119 ectopic pregnancies were treated with methotrexate. Sixteen cases did not meet the above criteria and were excluded; 103 cases were enrolled into the study. Eighty-four cases of ectopic pregnancy were successfully treated with methotrexate and did not require surgical intervention (81.6%). Mean time to resolution was  $30.1 \pm 18.3$  days. Nineteen cases required surgical intervention (18.4%). Of the patients that required surgical management, 12 had ruptured ectopic pregnancies at the time of surgery (11.6%) while 7 were unruptured but required surgery secondary to significantly worsening abdominal pain and/or increasing size of the ectopic pregnancy (6.8%). The rupture rate was higher ( $p < 0.05$ ) for patients with pretreatment hCG levels  $\geq 5000$  mIU/ml (6 out of 20, 30.0%) when compared with patients with pretreatment hCG levels < 5000 mIU/ml (6 out of 83, 7.2%).

Pretreatment hCG	Successful $p < 0.05$	Ruptured $p < 0.05$
<5000 mIU/ml	72 (86.7%)	6 (7.2%)
$\geq 5000$ mIU/ml	12 (60.0%)	6 (30.0%)
Pretreatment hCG	Unruptured Failure	Total
<5000 mIU/ml	5 (6.0%)	83
$\geq 5000$ mIU/ml	2 (10.0%)	20

**Conclusions:** Medical treatment of ectopic pregnancy with single-dose methotrexate has an overall success rate of 81.6% and a rupture rate of 11.6%. Pretreatment serum hCG level greater than 5000 mIU/ml appears to be associated with a greater risk of rupture.

## P-172

**Effect of Exogenous Growth Hormone in a Panhypopituitary Patient Undergoing Ovulation Induction with hMG.** <sup>1</sup>G. T. Koulianos, S. Degelos, <sup>2</sup>V. D. Castacane. <sup>1</sup>Div of Repro Endo and Infert, Mobile Infirmary Medical Center, Mobile AL, <sup>2</sup>Dept OB/GYN Texas Tech Regional Academic Center at Amarillo, Amarillo TX.

**Objectives:** Panhypopituitary (panhypopit) women desiring fertility are traditionally treated with progressively increasing doses of hMG. These women often require high doses of hMG. The beneficial effect of exogenously administered Growth Hormone (GH) in these women is contro-