Comparison of characteristics and IVF outcomes between two groups.

	Pregnancy (n=125)	Non-pregnancy (n=453)	P value
Age(years)	33.5 ± 0.3	35.3 ± 0.2	<.001
FSH (mIU/mL)	5.0 ± 0.2	5.7 ± 0.2	.020
Unexplained(%)	25.6 (32/125)	28.7 (130/453)	NS
Male factor(%)	34.4 (43/125)	41.7 (189/453)	NS
Female factor(%)	52.8 (66/125)	45.4 (205/452)	NS
Peak E_2(mIU/mL)	2207.3 ± 154.1	1873 ± 66.1	.026
$|N_{RO}\text{-}N_{LO}|$	2.9 ± 0.2	2.9 ± 0.1	NS
$|N_{RO}\text{-}N_{LO}| / N_{TOTAL} \times 100\,(\%)$	30.3 ± 2.2	41.8 ± 1.6	<.001

All the continuous variables are present in mean ± SE.

CONCLUSION: We observed prognostic value of the difference in number of oocytes between two ovaries to total oocytes ratio which is independent of patient's age in IVF cycles. Further studies exploring the presence of inter-ovarian control mechanism and its clinical implication is needed.

P-16 Tuesday, October 26, 2010

OBESITY IS ASSOCIATED WITH LOWER SERUM AMH LEVELS IN WOMEN WITH DIMINISHED OVARIAN RESERVE (DOR).
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OBJECTIVE: To investigate the association between body mass index (BMI) and serum AMH levels in reproductive age women with diminished ovarian reserve (DOR) diagnosed by elevated baseline FSH.

DESIGN: Cross sectional observational study.

MATERIALS AND METHODS: Two hundred and ninety women (ages: 21-50) were evaluated for infertility between 2007- 2010 and were included in this study. Baseline serum FSH levels were measured on day 2 or 3 of the cycle. Serum AMH levels were drawn randomly, unrelated to day of the cycle. Wilcoxon rank-sum test, multiple regression analysis and Spearman's rank correlation were used for statistical analysis. P<0.05 was considered significant.

RESULTS: BMI correlated negatively with serum AMH in women with elevated baseline FSH (>10IU/L) (r= -0.27, p=0.001) but not in women with normal baseline FSH (10IU/L or less). Among women with elevated baseline FSH, AMH was 43% lower in women with high BMI (>25) compared to women with normal BMI (25 or less) (p=0.0002). This association persisted after controlling for age (p=0.03). In marked contrast, serum AMH levels were no different between high and normal BMI groups among women with normal baseline FSH.

CONCLUSION: We report for the first time a negative association between BMI and serum AMH levels among women with elevated baseline FSH. We postulate that obesity has an adverse effect on ovarian reserve independent of age. Further studies are needed to understand the mechanisms of excess weight induced reduction in ovarian function.

P-17 Tuesday, October 26, 2010

OVARIAN RESERVE ASSESMENT IN PATIENTS WITH MULTIPLE SCLEROSIS. A. P. Cil, A. Leventoglu, M. Sonmezer, A. Uzdogan, Z. B. Guler, K. Oktay. OB-GYN, Kirikkale University, Kirikkale, Turkey; Neurology, Ufuk University, Ankara, Turkey; OB-GYN, Ankara University, Ankara, Turkey; Biochemistry, Hacettepe University, Ankara, Turkey; OB-GYN, Kirikkale University, Kirikkale, Turkey; OB-GYN, Institute for Fertility Preservation, Valhalla, NY.

OBJECTIVE: Multiple sclerosis (MS) is the most common disabling central nervous system disease of young adults with a female-to-male ratio of 3-2:1, majority (80%) being diagnosed between the ages of 20 and 45 years. Recently, the most popular treatment used for these patients are immunomodulating drugs (IMD). There is limited data about fertility and ovarian reserve in MS patients using IMD. In the current study, we sought to determine whether ovarian reserve is impaired in women with MS receiving IMD.

DESIGN: Prospective controlled.

MATERIALS AND METHODS: Seventeen women with MS and 28 age-matched regularly menstruating controls were prospectively enrolled. Subjects were examined on cycle days 2-5 to evaluate ovarian volume and AFC by ultrasound. On the same day, serum AMH, FSH, LH, and E2 levels were measured. All patients had been taking IMD for a mean duration of 44.4 ± 33.3 months, at the time of study inclusion.

RESULTS: MS patients and controls had comparable mean BMI and age at the study inclusion. None of the ovarian reserve markers showed a significant difference between MS patients and the controls (table-1). AMH levels correlated positively with mean ovarian volume and AFC (r = 0.559; p < 0.001 and r = 0.696; p < 0.001), whereas it correlated negatively with FSH and age (r = -0.606; p<0.001, r = -.436; p=0.003).

Comparison of demographic, hormonal and sonographic parameters of patients with MS and controls

	MS (n=17)	Controls(n=28)	p value
Age (y)	34.2 ± 6.1	33.4 ± 6.1	0.573
BMI (kg/m2)	25.4 ± 4.9	23.9 ± 4.8	0.264
AMH (ng/ml)	3.3 ± 2.7	3.4 ± 2.8	0.851
FSH (mIU/mL)	7.9 ± 3.5	7.9 ± 2.7	0.576
LH (mIU/mL)	8.1 ± 8.2	5.5 ± 1.6	0.385
E2 (pg/mL)	39.1 ± 11.8	39.2 ± 16.3	0.843
Mean AFC (2-9 mm)	9.2 ± 5.5	11.6 ± 6.1	0.200
Mean ovarian volume (cm3)	7.0 ± 3.2	9.3 ± 3.7	0.053

CONCLUSION: Long term therapy with IMD does not appear to impair ovarian reserve in women with MS.

P-18 Tuesday, October 26, 2010

SERUM MARKERS OF OVARIAN AGING ARE ASSOCIATED WITH NATURAL FERTILITY. A. Z. Steiner, A. H. Herring, S. Hoberman, F. Z. Stanczyk, D. D. Baird. Obstetrics and Gynecology, University of North Carolina, Chapel Hill, NC; Biostatistics, University of North Carolina, Chapel Hill, NC; Obstetrics and Gynecology, University of Southern California, Los Angeles, CA; Epidemiology Branch, NIEHS/NIH, Research Triangle Park, NC.

OBJECTIVE: Measures of ovarian aging are used as tests of fertility. We sought to generate estimates of the associations between early follicular phase follicle stimulating hormone (FSH), antimullerian hormone (AMH), inhibin B, and estradiol (E2) and fecundability in the general population.

DESIGN: Prospective time-to-pregnancy study.

MATERIALS AND METHODS: Women, 30-44 years old, with no history of infertility, who were trying to conceive for less than 3 months, provided early follicular phase serum (N=99). They were followed until pregnancy or for 6 months. While trying to conceive, women conducted standardized pregnancy testing and kept a diary recording bleeding and intercourse. Serum was analyzed for E2, FSH, AMH, and inhibin B. To adjust for patterns of intercourse, diary data were used to calculate day-specific probabilities of conception.

RESULTS: Sixty-four percent of women had conceived after 6 months of follow up. After adjusting for age, low AMH and high FSH were respectively associated with a 62% and 56% lower odds of conceiving given an act of intercourse on a fertile day (Table). Inhibin B and E2 showed no significant association with day-specific probabilities of conception.

Serum marker of ovarian aging	Odds Ratio (95% Confidence Limits)*	
	Unadjusted	Age-adjusted
FSH>10 mIU/ml	0.47 (0.08, 1.15)	0.44 (0.08, 1.10)
AMH≤0.7 ng/ml	0.36 (0.01, 0.84)	0.38 (0.08, 0.91)
Inhibin B≤21.9 pg/ml	0.82 (0.35, 1.55)	0.83 (0.35, 1.55)
Estradiol≥54.6 pg/ml	0.68 (0.27, 1.31)	0.65 (0.26, 1.28)

* Determined by day-specific probabilities model; values less than 1.0 imply reduced fecundability.

CONCLUSION: Early follicular phase, serum FSH and AMH appear to be associated with natural fertility in the general population. Further studies are needed to determine their ability to predict infertility.

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P-19 Tuesday, October 26, 2010

BODY MASS INDEX AND ITS ASSOCIATION WITH OVARIAN PRIMORDIAL FOLLICLE NUMBER. K. R. Hansen, L. B. Craig, N. A. Klein. Department of Obstetrics and Gynecology, Section of Reproductive Endocrinology and Infertility, University of Oklahoma Health Sciences Center, Oklahoma City, OK; Seattle Reproductive Medicine, Seattle, WA.

OBJECTIVE: Previous studies have investigated the impact of body-mass index (BMI) on the ovarian reserve by correlating the BMI with the age of spontaneous menopause or outcomes in the assisted reproductive technologies. Although occasionally in agreement, many of these studies have reported contradictory findings. The purpose of this investigation was to determine the relationship between BMI and the ovarian primordial follicle (PF) number.

DESIGN: Prospective study, university setting.

MATERIALS AND METHODS: Normal ovaries were collected from 96 women (age 20-52 years) undergoing oophorectomy, organ donation, or autopsy. Height and weight were recorded for calculation of BMI. A single ovary was selected for determination of the total ovarian PF number utilizing a validated fractionator/optical disector method. Comparisons of log-transformed PF number between age groups ("younger", 30-40 years old, n = 36; and "older", 41-52 years old, n = 60) and weight groups ("normal", BMI 18.5-24.9 kg/m^2; and "overweight or obese", BMI ≥ 25 kg/m^2) were performed with the Mann-Whitney U test and two-way analysis of variance as appropriate. A p-value of < 0.05 was considered statistically significant.

RESULTS: Overweight and obese subjects had lower ovarian PF counts than did normal weight subjects (p = 0.0006). After controlling for the effects of age with a two-way analysis of variance with both age group and weight group as independent variables, the overweight and obese subjects had lower PF counts than did normal weight subjects (p < 0.0001 for age group, p = 0.033 for weight group). Within age categories, the ages of subjects between the "normal" and "overweight or obese" groups were not significantly different.

CONCLUSION: In this investigation, an elevated BMI was associated with lower ovarian PF number. Additional studies are needed address the relationship between BMI and the ovarian reserve.

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P-20 Tuesday, October 26, 2010

PREGNANCY IN THE SETTING OF LOW AND UNDETECTABLE SERUM ANTI-MULLERIAN HORMONE (AMH). J. R. Crochet, K. C. Hawkins, M. C. Peavey, T. M. Price, D. K. Walmer, S. D. Copland. Obstetrics and Gynecology, Duke University Hospital, Durham, NC.

OBJECTIVE: AMH, produced by granulosa cells in primary and early preantral follicles, serves as a surrogate of ovarian reserve. AMH predicts number of oocytes retrieved in women undergoing controlled ovarian stimulation (COS). Although AMH has not been shown to predict embryo quality or pregnancy, it has been used as a gateway to treatment. The purpose of this study is to compare pregnancy outcome in women with low (<1 ng/mL) and undetectable (<0.1 ng/mL) AMH to those with higher (≥1 ng/mL) levels.

DESIGN: Retrospective database/chart review with case-controls.

MATERIALS AND METHODS: All cycles (N=1519) from 7/1/2008 to 3/31/2010 were reviewed. All cycles with an available AMH (N=505) were included. Donor oocyte and embryo banking cycles were excluded. Age, AMH, cycle type and pregnancy were recorded. Primary outcome was pregnancy. Statistical analysis was performed by Fisher's exact test in GraphPad.

RESULTS: In 180 cycles among 86 women with AMH <1 ng/mL, 39 pregnancies occurred: 13 spontaneously, 4 by COS with oral and/or injectable medications, and 22 by in vitro fertilization (IVF). Five pregnancies, one via IVF and 4 spontaneous, yielding 3 live births, one midtrimester loss, and one ongoing pregnancy were observed with undetectable AMH. Among women <35, IVF pregnancy rates were lower with AMH <1 ng/mL than AMH ≥1 ng/mL; this difference persisted if limited to women achieving embryo transfer (ET). Among women ≥35, IVF pregnancy rate did not differ by AMH.

Pregnancy by age and AMH

	AGE	AMH <1ng/mL	AMH ≥1ng/mL	p-Value
Pregnancy/IVF start	<35	38.9% (7/18)	69.6% (39/56)	0.0264
	≥35	34.9% (15/43)	40.0% (20/50)	NS
Pregnancy/ET	<35	43.8% (7/16)	76.5% (39/51)	0.0279
	≥35	48.4% (15/31)	43.5% (20/46)	NS

CONCLUSION: Pregnancy (via spontaneous, COS, or IVF) is possible even when AMH is low or undetectable. Thus, AMH should not be used as the sole gateway to assisted reproductive techniques. Prospective cohort studies of women with low AMH are needed.

P-21 Tuesday, October 26, 2010

AGE SPECIFIC MEANS AND STANDARD DEVIATIONS OF SERUM ANTIMULLERIAN HORMONE (AMH) FOR 15,234 WOMEN PRESENTING TO FERTILITY CENTERS WITHIN THE UNITED STATES. B. Leader, V. Baker, D. Seifer. ReproSource, Inc, Woburn, MA; Rachel's Well, Marietta, GA; Obstetrics and Gynecology, Stanford Medical School, Stanford, CA; Genesis Fertility & Reproductive Medicine, Brooklyn, NY.

OBJECTIVE: We aggregated AMH values from women being evaluated at fertility centers to assist in better defining expected mean values and standard deviations (mean and SD) at 1 year intervals in this specific population.

DESIGN: Retrospective review.

MATERIALS AND METHODS: 15,234 randomly selected AMH values (<1100/year age interval) were obtained from a single clinical reference laboratory receiving serum specimens from US fertility centers located in 37 different states between 2007-10. Importantly, the same laboratory developed AMH assay protocol (based upon Beckman/DSL system) was used for all patients.

RESULTS: Mean AMH values decreased steadily in a manner highly correlated with advancing age (R^2=0.97). The yearly decreases in absolute mean AMH values (in ng/mL) using rolling two year averages in women ages 25 to 31, 32 to 40 and 41 to 48 were approximately 0.2, 0.15, and 0.1, respectively.

Age Specific AMH Levels (ng/mL)

Age in years	AMH Mean (SD)	Age in years	AMH Mean (SD)
25	3.83 (3.28)	37	1.58 (1.74)
26	3.99 (3.29)	38	1.42 (1.86)
27	3.67 (2.87)	39	1.34 (1.65)
28	3.63 (3.57)	40	1.11 (1.35)
29	3.44 (3.14)	41	0.99 (1.14)
30	3.25 (3.20)	42	0.87 (1.12)
31	3.00 (2.85)	43	0.72 (0.87)
32	2.53 (2.47)	44	0.64 (1.15)
33	2.35 (2.51)	45	0.54 (0.81)
34	2.25 (2.34)	46	0.48 (0.64)
35	2.00 (2.20)	47	0.40 (0.43)
36	1.83 (1.97)	48	0.25 (0.37)