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Title:
VERY LOW LEVEL OF ANTI-MULLERIAN HORMONE (AMH) IN A LARGE COHORT OF ASSISTED REPRODUCTIVE TECHNOLOGY (ART) PATIENTS

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Objective:
The counseling and management of women with low AMH levels presents a significant challenge where either cycle cancellation or poor response is foreseen. Prior clinical impression suggests that an extremely low level of AMH can serve as an alert for a clinician to dissuade a patient from utilizing certain fertility treatments. The aim of this study was to evaluate ART laboratory outcomes from patients with extremely low AMH levels.

Design:
Retrospective cohort analysis

Materials and Methods:
All patients scheduled for a fresh IVF cycle with "extremely low" (Group A: ≤0.2) or "low" AMH levels (Group B: 0.2 – ≤0.5; Group C: ≤1 ng/ml) between January 2009 to March 2015 were included. Main outcome measures were total retrieved oocytes and cycle cancellation rates. Secondary outcomes analyzed were age, day 3 FSH, basal AFC, number of follicles greater than 14mm at surge, peak estradiol, cumulative amount of gonadotropins (GND) and days of stimulation.

Results:
Five hundred and forty four patients underwent 1647 cycles (Table 1). The rate of cycle cancellation prior to VOR was significantly higher in Group A patients (44.2%) when compared to Group B and C patients (20.8%; 10.0%). In patients that reached VOR, the number of oocytes retrieved per cycle was significantly lower in Group A (5.1±3.0) compared to Groups B and C (6.4±3.5; 8.6±4.7). All secondary variables were statistically different between groups except the average days of stimulation required.

Conclusions:

AMH is one of the best available tools for the detection of low ovarian reserve and its role as a clinical test is robust. To our knowledge, this is one of the largest studies to examine laboratory outcomes in extremely low AMH level patients. The results demonstrated that patients with very low AMH levels require a higher amount of gonadotropins than patients with merely low levels. Although clinicians should inform patients the potential adverse realities of seeking treatment, our study demonstrated that patients should not be excluded from pursing an IVF cycle as they still respond, fairly, to stimulation. With further research, a more personalized stimulated treatment regimen incorporated genomic and phenotypic variables will lead to accurate prognostic information and optimal treatment strategies.

Support:

None.

Table:

	<0.2 ng/mL	<0.5 ng/mL	<1 ng/mL	ANOVA	Chi Square A vs. B	Chi Square A vs. C
Patients	n=156	n=189	n=199	544		
Cycles	n=437	n=557	n=653	1647		
Age	38.5±4.5	39.0±4.0	38.5±3.9	NS	NS	NS
D3 FSH	8.8±7.4	7.5±4.7	7.6±4.0	p<0.05	p<0.05	p<0.05
AMH	0.15±0.04	0.35±0.09	0.75±0.14	p<0.05	p<0.05	p<0.05
BAFC	5.2±2.7	5.8±3.0	7.3±3.4	p<0.05	p<0.05	p<0.05
Fols>14mm	4.0±2.7	5.6±3.0	7.2±3.9	p<0.05	p<0.05	p<0.05
Peak E2	876.9±594.9	1187.5±646.1	1529.1±837.5	p<0.05	p<0.05	p<0.05
Cumulative GND	4372.5±1350.9	4701.5±1208.8	4794.3±1114.1	p<0.05	p<0.05	p<0.05
GND days	12.7±2.2	12.8±2.1	12.7±1.7	NS	NS	NS
Retrieved	5.1±3.0	6.4±3.5	8.6±4.7	p<0.05	p<0.05	p<0.05
Cancellation rate (before retrieval)	44.2% (193/437)	20.8% (116/557)	10.0% (65/653)		p<0.05	p<0.05