



AMERICAN SOCIETY FOR
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Title:

PATIENTS WITH LOW THEN NORMAL AMH MEASUREMENTS DEMONSTRATE OVARIAN RESERVE COMPARABLE TO THOSE WITH TWO NORMAL MEASUREMENTS

Authors:

Julian A. Gingold, MD, PhD^{1,2}, Jaime Knopman, MD, Sheeva Talebian, MD, Michael C. Whitehouse BA¹, Joseph A. Lee BA¹, Alan B. Copperman, MD^{1,2}

Affiliations:

1. Reproductive Medicine Associates of New York, 635 Madison Ave 10th Floor New York, New York, United States, 10022
2. Obstetrics, Gynecology and Reproductive Science, Icahn School of Medicine at Mount Sinai, 1176 Fifth Avenue, 9th Floor, New York, New York, United States, 10029.

Objective:

There is a subset of patients who present initially with an unexpectedly low AMH level. These situations precipitate concern about short- and long-term female reproductive function. A later discordant confirmatory test raises questions about whether the lower or the higher level is the better predictor of ovarian reserve and responsiveness. This study sought to evaluate whether oocyte yields in patients with discordant AMH levels were more similar to those of patients with concordantly normal or abnormal levels.

Design:

Retrospective cohort study

Materials and Methods:

Patients who underwent two random AMH measurements separated by > 30 days in the year prior to their IVF start date from July 2007-March 2015 were included. Patients with AMH >5 ng/mL were excluded. The first and second AMH measurements were categorized as abnormal (<0.8 ng/mL) or normal (≥ 0.8). Oocyte retrieval (VOR) count was measured. VOR was modeled by Poisson regression against oocyte age group and AMH categorization. Patients from oocyte age group A (<35) with 2 normal AMH measurements were considered the model reference group. Model significance was assessed by chi-square of ANOVA with significance at $p < 0.05$.

Results:

Couples (n=110) underwent 131 fresh IVF cycles, of which 114 were completed.



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Patients with two abnormal AMH measurements (n=36 completed cycles) obtained significantly fewer oocytes (6.6 ± 3.5) than those with two normal AMH measurements (n=51) (11.5 ± 5.8) ($p < 0.001$) after controlling for oocyte age. Patients whose first AMH was normal and second AMH was abnormal (n=10) obtained fewer oocytes (9.5 ± 6.6) than those with two normal AMH measurements ($p < 0.05$) but more than patients with two abnormal AMH measurements ($p < 0.005$) after controlling for oocyte age.

Patients whose first AMH was abnormal and second AMH was normal (n=17) obtained no fewer oocytes (11.4 ± 7.1) than those with two normal AMH measurements ($p = 0.77$) after controlling for oocyte age.

Table:

First AMH Abnormal	Second AMH Abnormal	# Patients	# Cycles Started	# Cycles Completed	VOR	
					Mean	SD
F	F	47	55	51	11.5	5.8
T	F	15	20	17	11.4	7.1
F	T	9	11	10	9.5	6.6
T	T	39	45	36	6.6	3.5

Conclusions:

Ovarian reserve in patients with an abnormal AMH level that normalizes upon repeat testing ultimately has normal ovarian reserve. It is possible that some initially low AMH levels might have been caused by long term OCP or hypothalamic suppression of the pituitary-ovarian axis with associated suppression of ovarian AMH production. Patients whose repeat AMH testing normalizes should be counseled that their more recent normal value may mitigate their previous abnormal one. A patient with a normal then abnormal AMH can anticipate outcomes in between those of consistently normal and consistently abnormal AMH patients.

Support:

None



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Oocyte Age	First AMH Abnormal	Second AMH Abnormal	# Patients	# Cycles Started	# Cycles Completed	VOR	
						Mean	SD
A	F	F	9	11	11	18.0	4.8
A	T	F	3	4	4	7.3	3.6
A	F	T	3	3	3	16.7	8.4
A	T	T	12	13	11	8.4	4.2
B	F	F	11	11	11	9.8	5.2
B	T	F	4	5	4	6.2	2.6
B	F	T	1	1	1	9.0	
B	T	T	10	11	10	6.7	3.0
C	F	F	15	18	18	10.7	5.1
C	T	F	5	6	6	13.8	8.0
C	F	T	4	5	5	5.4	2.1
C	T	T	6	7	5	6.4	2.8
D	F	F	8	8	6	10.6	4.9
D	T	F	3	4	2	16.5	7.5
D	F	T	1	1	1	9.0	
D	T	T	9	11	8	4.6	2.8
E	F	F	5	7	5	7.3	3.4
E	T	F	1	1	1	19.0	
E	F	T	1	1	0		
E	T	T	2	2	2	5.5	4.9

Oocyte Age	# Patients	# Cycles Started	# Cycles Completed	VOR	
				Mean	SD
A	27	31	29	12.5	6.7
B	26	28	26	7.9	4.1
C	30	36	34	9.7	5.7
D	21	24	17	9.0	6.2
E	9	11	8	8.1	5.0

The Effect of Repeat AMH Measurements On VOR

