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## INTRODUCTION

**Introduction:** Modified natural IVF (mnIVF) is a useful alternative to controlled ovarian stimulation (COH), especially in young patients presenting with a low ovarian reserve or young poor responders. Serum AMH is a reliable ovarian reserve biomarker, and can predict the ovarian response to COH. Few studies have investigated the predictive value of AMH on mnIVF outcomes.

**Methods:** This retrospective cohort study included 638 women starting their first mnIVF cycle between 2010 and 2013 at a university-affiliated private IVF center. All women aged ≤ 39 years initiating their first mnIVF cycle were included. Patients were divided in 3 AMH groups: < 0.5 ng/ml (25th percentile), 0.51-2.03 ng/ml (25-75th, reference), and 2.04-6.56 ng/ml (75th). Analyses were stratified by AMH percentile and patients' ages (all ages, <35, 35-39 years old). Logistic regression assessed the impact of age and AMH percentile on outcomes. Live birth rate was the primary outcome measure.

**Results:** No significant difference was found between the 3 AMH groups concerning the cancellation rate, success of egg retrieval, embryo transfer, or biochemical and clinical pregnancy rates. In addition, live birth rates per started cycle were comparable across AMH percentiles (11.6%, 12.4% and 17% for the 25th, 25th-75th, and 75th percentile, respectively; P=0.285). Logistic regression analysis did not identify AMH percentile as a significant predictor of live birth; compared to the 25-75th percentile reference group, the odds ratios (OR [95%CI]) for live birth in the <25th AMH percentile and >75th AMH percentile groups were 0.97 [0.54-1.76] (P=0.974) and 1.41 [0.82-2.41] (P=0.209), respectively). The results were the same regardless of stratification by age group (<35 years, 35-39 years). The lowest AMH value associated with a pregnancy was 0.08 ng/ml.

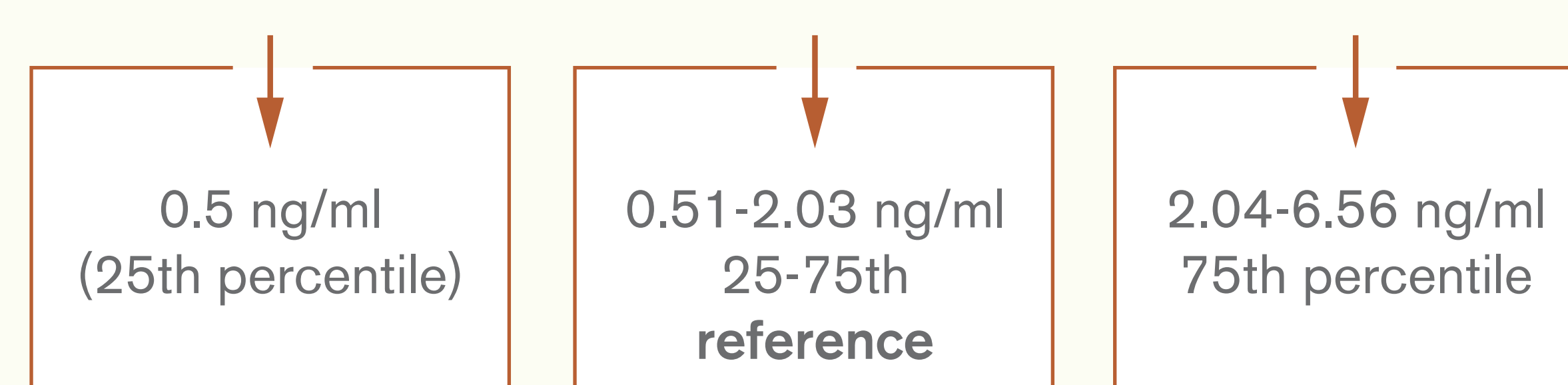
**Conclusions:** Serum AMH cannot be used to predict mnIVF implantation, clinical pregnancy and live birth rates. Patients in lower/upper AMH level percentiles report pregnancy and live birth rates comparable to patients with normal AMH. Modified natural IVF is an excellent option for young patients with low ovarian reserve.

## OBJECTIVE

Our goal was to study the impact of serum AMH on mnIVF pregnancy rates and live birth rates.

## METHODS

We conducted a retrospective cohort study. All first mnIVF cycles in women aged ≤ 39 years between 2010 and 2013 were included. Patients were divided in 3 AMH groups:



## RESULTS

**Table 1.** Descriptive statistics of the study population (n=638)

	AMH <25e (< 0.5) n= 164 (25.7)	AMH 25-75e (0.51- 2.03) n= 315 (49.4)	AMH > 75e (2.04- 6.56) 159 (24.9)	P
Age (SD)	33.9 (2.9)	32.2 (3.3)	31.1 (3.4)	<0.001
Day 3 AMH (ng/ml)	0.24 (0.1)	1.1 (0.4)	3.2 (1.1)	<0.001
AFC	6.8 (3.7)	13.8 (5.3)	21.5 (7.5)	<0.001
Day 3 FSH (UI/l)	11.7 (8.0)	7.7 (3.9)	6.3 (1.6)	<0.001
Day 3 E2 (pmol/l)	229	198	196	.136
Cause of infertility, n (%)				
Unexplained	9 (5.5)	61 (19.4)	38 (23.9)	<0.001
Male factor	13 (7.9)	109 (34.6)	86 (54.1)	
Tubal factor and/or endometriosis	11 (6.7)	54 (17.1)	23 (14.5)	
DOR	77 (47)	36 (11.4)	1 (0.6)	
Mixed	54 (32.9)	52 (16.5)	10 (6.3)	
Other	0 (0)	3 (1)	1 (0.6)	

AFC: antral follicle count at Day 3; E2, estradiol; DOR: diminished ovarian reserve

**Table 2.** mnIVF outcomes, univariate analysis (n=638)

	AMH < 25e (0.01- 0.5) n= 164 (25.7)	AMH 25-75e (0.51- 2.03) n= 315 (49.4)	AMH > 75e (2.04- 6.56) 159 (24.9)	P
Cancelled cycle	23 (14.0)	32 (10.2)	18 (11.3)	0.45
Unsuccessful oocyte retrieval	13 (9.2)	32 (11.3)	10 (7.1)	0.37
Embryo transfer	69 (42.1)	145 (46.0)	69 (43.4)	0.68
Implantation rate	23 (33.3)	60 (41.4)	32 (46.4)	0.29
Clinical pregnancy:				
per cycle	21 (12.8)	50 (15.9)	29 (18.2)	0.40
per transfer	21 (30.4)	50 (34.5)	29 (42.0)	0.35
Miscarriage	4 (17.4)	15 (25)	4 (12.5)	0.34
Live birth :				
per cycle	19 (11.6)	39 (12.4)	27 (17.0)	0.28
per transfer	19 (27.5)	39 (26.9)	27 (39.1)	0.16

Outcomes are per started cycle, otherwise specified.

**There was no significant difference between the 3 AMH groups concerning the cancellation rate, success of egg retrieval, embryo transfer, or biochemical and clinical pregnancy rates.**

**Table 3.** Logistic regression, mnIVF outcomes, multivariate analysis (n= 638)

	AMH < 25e OR (95% CI)	AMH 25-75e Reference	AMH > 75e OR (95% CI)
Cancellation	1.36 (0.76-2.43)	1	1.17 (0.63-2.17)
Embryo transfer	0.88 (0.59-1.29)	1	0.88 (0.60-1.30)
Clinical pregnancy	0.82 (0.47-1.44)	1	1.15 (0.69-1.90)
Miscarriage	0.65 (0.19-2.28)	1	0.42 (0.13-1.41)
Live birth	0.97 (0.54-1.76)	1	1.41 (0.82-2.41)

**Live birth rates per cycle were comparable across AMH percentiles. The lowest AMH value associated with a pregnancy was 0.08 ng/ml.**

## CONCLUSIONS

Serum AMH cannot be used to predict mnIVF implantation, clinical pregnancy and live birth rates.

Patients in lower/upper AMH level percentiles have pregnancy and live birth rates comparable to patients with normal AMH.

Modified natural IVF is an excellent option for young patients with low ovarian reserve.