AMH AS AN INDICATOR FOR THE NUMBER OF EMBRYOS TO TRANSFER IN FROZEN EMBRYO TRANSFER CYCLES

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INTRODUCTION

The goal of the Quebec public IVF programme is to increase availability of IVF treatment while decreasing multiple pregnancy. As a result, less fresh embryos are being transferred and the proportion of frozen embryos per cycle started increased from 23.5% to 49.9% ($p < 0.001$) from 2009 to 2011.

Anti-Müllerian hormone (AMH) is exclusively produced by granulosa cells of preantral and small antral follicles. It is widely used as a marker for follicular ovarian reserve as it seems to predict ovarian response even better than age of the patient, FSH or estradiol. It has recently also been suggested that AMH may be predictive of embryo quality and implantation rate although not pregnancy rate in fresh IVF cycles. It was also reported to have an incidence on rates of ongoing pregnancies in women undergoing their first IVF cycles including FET.

OBJECTIVE

The aim of this study was to evaluate if AMH value influences multiple pregnancy rates so as to uncover new strategies in number of embryos to transfer while maintaining low multiple pregnancy rates in FET. This would also further personalize patients' treatment plans.

METHODS

Seven hundred and nine cycles (184 with AMH≤1ng/ml and 525 with AMH>1ng/ml) undergoing frozen embryo transfer (FET) with vitrified day 3 embryos or blastocysts between January 2009 and July 2012 were included in this retrospective data analysis. Embryos of satisfactory grades were thawed using either medicult origio warming kit (cleaved embryos) or irvine warming kit (blastocysts) for all but 5 patients for whom embryos were frozen in a slow freezing method. Warming was done the morning of (cleaved) or the afternoon prior to (blastocysts) the transfer. Endometrial preparation was carried out using day 21 depot-lupron and then increasing estradiol patches or by natural cycle until an endometrial thickness of 8mm was obtained.

RESULTS

	AMH <1	AMH ≥1	p-value*
N	184	525	
Age at FET **Age at fresh cycle**	37 (SD 3.4) 36.3 (SD 3.5)	34.3 (SD 4.3) 33.7 (SD 4.3)	p=0.001* p= 0.01* (Fisher)
Mean number of embryo transferred	1.63	1.49	p= 0.01*(ANOVA)
Mean AMH value (ng/ml)	0.6	3.32	
N of patients with ≥dET	100	224	
N of multiple pregnancy	8% (n=2)	28.8% (n=17)	p=0.047* (Fisher)
Implantation rate	0.16 (SD 0.32)	0.19 (SD 0.36)	p=0.4 (ANOVA)
Implantation rate for pregnant patients	0.71 (SD 0.25)	0.82 (SD 0.25)	p=0.02* (ANOVA)

STATISTICS

Statistical analysis was performed using ANOVA, Kruskall-Wallis, and Fisher T-test as indicated, considering significance with 95% confidence when $P < 0.05$.

- Identical Age Range in the two groups: [26-44]
- No difference in Implantation Rate
- Multiple pregnancy rate more than 3 fold higher in AMH≥1 group
- Mean Age of patients with multiple pregnancy : 34.67
- 17 patients with DET vs. 2 patients with 3 embryos transferred

CONCLUSION

Based on these data, it may be possible to use serum AMH as an indicator to assist in the decision as to the number of embryos to transfer in a FET cycle. In patients with a low AMH level, consideration could be made to transfer more embryos without the increased risk of multiple pregnancy whereas in the higher AMH group of patients more attention needs to be paid to the number of embryos at transfer. Two elements may affect the results; during the study period individual patients may have undergone more than one cycle thereby possibly introducing a bias. Also some patients during the study period did not have an AMH result available and were therefore eliminated from the study.

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