The Relationship between Thyroid Autoantibody and Fertilization Outcome in First Time in Vitro Fertilization

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PROBLEM STATEMENT The presence of thyroid auto-antibodies (TAA) is related to fertility problems and there have been researches that showed the impact of TAA on in vitro fertilization and embryo transfer (IVF-ET) outcomes. However, most of their results were limited in the outcomes after embryo implantation. The aim of this study was to investigate the impact of TAA on fertilization rate and embryo qualities before embryo implantation.

MATERIALS AND METHODS Retrospectively, we analyzed the women who underwent their first-time IVF-ET cycles from January 2015 to December 2016. The patients who had the infertility cause of male factor and abnormal findings of semen analysis on the fertilization day were excluded. A total 487 patients were included and 34 patients had positive results of TAA, whereas 453 patients had negative results of TAA.

RESULTS Mean age, AMH, TSH, fT4 levels and the duration of infertility of both groups were similar. There were no significant differences between the groups in terms of total number of retrieved oocytes, the number of metaphase II and metaphase I oocytes, the ratio of intracytoplasmic sperm injection (ICSI). Statistically, differences of total fertilization rate (68.9% vs. 69.8%, $p=0.760$), fertilization rate with ICSI (84.2% vs. 79.2%, $p=0.244$), fertilization rate of conventional IVF (62.1% vs. 65.8%, $p=0.278$) and the ratio of good quality embryos (13.6% vs. 14.4%, $p=0.760$) were not found.

CONCLUSION There was no significant difference in the outcomes of fertilization following IVF-ET in the patients with TAA when compared with those negative for TAA. Thyroid autoantibody status did not affect fertilization outcomes in women with their first time in Vitro Fertilization in this study.

Table1. Basic Characteristics of Patients

	Thyroid Ab(+) (n=34)	Thyroid Ab(-) (n=453)	P-value
Mean age (years)	34.4±4.7	34.8±4.0	NS
AMH (ng/mL)	3.9±3.5	4.1±3.8	NS
TSH (uIU/mL)	2.7±1.9	2.3±1.4	NS
FreeT4 (ng/dL)	1.3±0.3	1.3±0.9	NS
Duration of Infertility (months)	37.7±25.3	30.0±27.5	NS

Table2. Reproductive outcomes according to TAA

	Thyroid Ab(+)	Thyroid Ab(-)	P-value
Average No. of Oocytes	9.5±6.3	10.2±6.7	NS
Average No. of MII Oocytes	7.4±5.0	7.9±5.3	NS
Average No. of MI Oocytes	1.7±1.2	1.8±1.1	NS
Average No. of Oocytes for ICSI	4.1±2.0	4.4±2.6	NS
Average No. of Oocytes for Conventional IVF	7.4±5.6	8.2±5.9	NS

Table3. Fertilization outcomes according to TAA

	Thyroid Ab(+)	Thyroid Ab(-)	P-value
Total Fertilization Rate (%)	68.9 (%)	69.8 (%)	0.760
Fertilization Rate with ICSI (%)	84.2 (%)	79.2 (%)	0.244
Fertilization Rate with Conventional IVF (%)	62.1 (%)	65.8 (%)	0.278

Figure 1. Fertilization rate with ICSI (%)

Figure 2. Fertilization rate with conventional IVF (%)

Figure 3. Grading of Day3 Embryos (%)