

## **SERIAL ESTIMATION OF TH1:th2 CYTOKINES PROFILE IN WOMEN UNDERGOING IN-VITRO FERTILIZATION-EMBRYO TRANSFER**

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**PUBLISHED** Am J Reprod Immunol. 2008 Mar;59(3):206-11

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### **ABSTRACT**

#### **PROBLEM**

To investigate changes in the ratio of T-cell subpopulations expressing intracellular T helper1 (Th1) and T helper 2 (Th2) cytokines in women with a history of recurrent failed implantation under going in-vitro fertilization (IVF)-embryo transfer.

#### **METHOD OF STUDY**

Twenty-eight peripheral blood samples were obtained at two time points, from 14 women undergoing IVF treatment; eight women with a history of recurrent failed implantation, who did not get pregnant in the index IVF cycle and six who had one or more previous successful IVF pregnancy and who became pregnant in the index IVF cycle. The proportion of lymphocytes expressing interferon-gamma (IFN-gamma), tumour necrosis factor-alpha (TNF-alpha), and interleukin 4 (IL-4) and the Th1:Th2 ratios of IFN-gamma:IL-4, and TNF-alpha:IL-4 in T helper cells was measured by flow cytometry, in samples obtained before commencing IVF treatment and in samples obtained after ovarian stimulation (on the day of oocyte retrieval).

#### **RESULTS**

In samples collected during oocyte retrieval, women with a history of recurrent failed implantation had a higher IFN-gamma:IL-4 and TNF-alpha:IL-4 ratio than the control group, (18.6+/-9.3 versus 6.47+/-1.68, P=0.009) and (39.1+/-15.7 versus 11.53+/-3.76, P=0.001) respectively. In women with a history of recurrent failed implantation the ratio of IFN-gamma:IL-4 and TNF-alpha:IL-4 at oocyte retrieval was higher than pre-treatment ratios (18.6+/-9.3 versus 12.01+/-9.8, P=0.018) and 39.10+/-15.7 versus 18.66+/-11.42, P=0.010) respectively, showing a Th1 bias. In women with a successful IVF the converse was true; the ratio at oocyte retrieval was significantly lower than pre-treatment ratios (6.47+/-1.68 versus 9.37+/-6.8, P=0.035) and 11.53+/-3.76 versus 18.60+/-12.9, P=0.027) respectively, representing a Th2 bias.

#### **CONCLUSION**

Women with a history of unexplained recurrent failed IVF treatment have a Th1 bias and this polarization is more enhanced following hormonal manipulations during IVF treatment. Comparing pre-treatment ratios of IFN-gamma:IL-4 and TNF-alpha:IL-4 to ratios obtained at oocyte retrieval may be clinically useful. Women with recurrent failed IVF have increasing ratios.