

Regulatory T cells in the ovarian follicular fluid of infertile women

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Regulatory T cells (Treg) play an essential role in support tolerance to self antigens and alloantigens that is very important during the pregnancy. Studies have shown that the physiological pregnancy is accompanied by an increase in the number of Treg in the blood serum. The aim of the work was to study the content of regulatory T cells in the follicular fluid of women undergoing IVF-treatments and to examine the role of Treg in the ovulatory process. Materials and Methods: The study included 53 women undergoing IVF-treatments. The average age of women was $34,6 \pm 5,1$. Follicular fluid samples have been taken during transvaginal ovarian puncture, centrifuged (2000 rev/min), then cells have been frozen at -80°C . The content of $\text{CD4}+\text{CD25}+\text{FoxP3}+$ cells was determined by flow cytometry (FACSCalibur) using labeled monoclonal antibodies. Results. The data obtained have shown that samples of FF contained lymphocytes with phenotype of regulatory cells ($\text{CD4}+\text{CD25}+\text{FoxP3}+$). The number of Treg in FF varied from 1 to 13% and averaged $5.1 \pm 0,5$. The numbers of Treg in FF in women under the age of 35 years and older did not significantly differ. Comparative analysis of FF showed no significant differences in Tregs between women with different causes with infertility. The analysis of relation between the number of follicles and Treg showed that highest number of $\text{CD4}+\text{CD25}+\text{FoxP3}+$ cells was observed in women with follicles from 6 to 12. The percentage of $\text{CD4}+\text{CD25}+\text{FoxP3}+$ cells in this group was significantly higher than in women with follicles number > 12 ($5.7 \pm 0.8\%$ vs $3.2 \pm 1.6\%$; $p < 0.01$) and women with follicle number < 6 ($4.5 \pm 0.8\%$; $p = 0.15$) as a trend. Oocytes in women undergoing ovarian hyperstimulation are known to be heterogeneous in maturation stage. Retrospective analysis of $\text{CD4}+\text{CD25}+\text{FoxP3}+$ in women with different number of zygotes showed a significantly low number of Treg in women with higher index of fertilization ($I_i = 1.0 - 0.75$) as compared with opposite group ($I_i = 0.74 - 0.55$; $2.7 \pm 0,6\%$ vs $5.1 \pm 0,5\%$; $p < 0.05$). Conclusion: For the first time it was shown that FF in women undergoing IVF-treatment contains $\text{CD4}+\text{CD25}+\text{FoxP3}+$ Treg. The percentage of Treg is associated with the number of follicles and zygotes.

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