

OVARIAN LEUKOCYTES AND CYTOKINES IN POLYCYSTIC OVARY SYNDROME

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Polycystic ovary syndrome (PCOS) is associated with anovulatory infertility and metabolic disturbances. PCOS has an unknown aetiology but is involved with aberration of substances that lead to follicular growth. The ovarian leukocyte/cytokine network is important in the ovary and has not been adequately examined in PCOS. The aim of the study was to look at the distribution of leukocytes in the ovaries of women with PCOS and to look at expression of cytokine and chemokine mRNA in follicular cells from these patients. Ovaries were obtained from PCOS ($n = 5$) and non-PCOS ($n = 4$) women undergoing gynaecological surgery for non-ovarian conditions prior to the menopause. They were immunostained for a wide variety of leukocyte markers and distribution counted using visual imaging software. Luteinising granulosa cells were obtained prior to ovulation in women undergoing *in vitro* fertilization with ($n = 11$) and without ($n = 22$) PCOS and mRNA studied using quantitative RT-PCR for various cytokines and chemokines. The CD45RO subset of leukocytes (principally activated/memory T-lymphocytes) were significantly decreased in ovaries from PCOS women compared to non-PCOS women. The other leukocytes were not different in distribution and numbers. Transcripts for CSF-1, IL-1 β , IL-6, IL-8, IL-10, MCP-1 and TNF α were not different between PCOS and non-PCOS women whilst GM-CSF mRNA was not detectable in either group. There was an association between high testosterone levels and high IL1 β and low TNF α transcripts. Women who became pregnant following IVF had higher levels of IL-10 mRNA. The role of T-lymphocytes in PCOS needs further examination, and if the leukocyte/cytokine network in PCOS is important, other cells and cytokines need examination. This is the first study to definitively describe the leukocyte/cytokine network within polycystic ovaries. While other cells and substances may be important in PCOS and intervention procedures such as ovarian drilling, it does not appear as though macrophages, neutrophils, B-lymphocytes and a variety of cytokines are involved in the aetiology of PCOS.