**Subcutaneously Administered Granulocyte Colony-Stimulating Factor (G-CSF) Modulates Ovarian Follicular Fluid Cytokines During Ovarian Stimulation**

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**Objective:** During oocyte and follicle development, the intra-follicular microenvironment undergoes various modulations resulting from somatic-germ cell interactions which may directly impact oocyte quality. Our study investigated if recombinant granulocyte colony- stimulating factor (G-CSF) administration was associated with changes in follicular fluid cytokine levels in follicles retrieved from women undergoing ovarian hyper-stimulation.

**Design:** retrospective analysis

**Methods and methods**: Follicular fluid cytokines were measured from approximately 20 follicles in discarded samples from eight randomly selected women including 4 women who received GCSF (mean age 38 years old) and 4 (mean age 38.5 years old) who did not. For each woman, 4 to 5 specimens were obtained each of which represented pooled aspirated fluid from 4 to 6 independent follicles. G-CSF was administered by subcutaneous injection at 1µg (100,000 IU)/kg/day) , starting simultaneously with gonadotropin administration through oocyte retrieval. Follicular fluid samples were frozen at -80C within 1hr hour of collection. Levels of 38 different serum cytokines were measured (Luminex, Austin, TX). Mean cytokine levels between control and GCSF treated patients were compared using an unpaired t-test.

**Results:** GCSF-treated women showed a significant difference in follicular fluid levels of six cytokines. Significant increases were observed in G-CSF (3-fold, p<0.01), macrophage-derived chemokine (MDC, 1.3-fold, p< 0.05), and interferon-γ inducible protein 10 (IP-10, 1.79-fold, p< 0.001). Decreases were observed in growth regulated oncogene (GRO, 1.75-fold, p<0.05), interleukin 8 (IL-8, 1.76-fold, p< 0.05) and monocyte chemoattractant protein-1 (MCP-1, 1.44-fold, p<0.001).

**Conclusions:** Our data indicate that administration of G-CSF is associated with significant changes in follicular fluid cytokines including increased GCSF and IP-10 levels. As previous studies have demonstrated that increased follicular fluid GCSF and/or IP-10 are associated with increased oocyte yield, improved embryo quality and higher successful pregnancy rates, it is possible that GCSF administration during ovarian stimulation may favorably modify follicular fluid cytokine levels.