

88. INSEMINATION INDUCES PRO-INFLAMMATORY CYTOKINE mRNA EXPRESSION IN THE HUMAN CERVIX

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In mice and other species, deposition of semen into the female reproductive tract elicits a local inflammation-like response, characterised by the recruitment of leukocytes into the uterine endometrial tissues. Recent studies in our laboratory have demonstrated that an equivalent inflammatory response occurs within the human cervical tissue following insemination. The purpose of this study was to investigate the molecular regulation of this response, specifically to examine the effect of insemination on expression of mRNA for pro-inflammatory cytokines and chemokines in cervix tissue. Biopsies were collected from the ectocervix during the peri-ovulatory stage of the menstrual cycle (LH0 to LH+1) and again 48 hours later, at 12 hours following either unprotected intercourse ($n = 6$), condom-protected intercourse ($n = 5$) or abstinence from intercourse ($n = 7$). Total RNA was prepared using standard techniques, reverse-transcribed and relative mRNA expression for pro-inflammatory cytokine and chemokines was quantified using real-time RT-PCR. The relative mRNA expression of GM-CSF, a potent stimulator of myeloid cell recruitment, was found to increase by $254 \pm 72\%$ (mean percent increase \pm SD) ($P = 0.004$) following unprotected intercourse. There were trends towards increases after intercourse in expression of IL-6, a stimulator of antigen presentation by macrophages and dendritic cells ($265 \pm 107\%$; $P = 0.11$) and IL-8, a strongly chemo-attractive molecule regulating myeloid cell recruitment ($1733 \pm 1400\%$; $P = 0.06$) following intercourse. mRNA expression was not significantly changed following abstinence or condom-protected intercourse. These data demonstrate that chemotactic cytokines mediate the inflammatory-like response to insemination within the cervical tissues of women. Exposure to semen, as opposed to mechanical trauma appears to be responsible for generating this response, which is likely to be of importance in eliciting an immune response to sperm antigens and micro-organisms contained within the ejaculate.