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Topic : Endometriosis and the peritoneum

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Aberrant gene expression of cytokines in peritoneum and endometrium during the menstrual phase in women with endometriosis

Endometriosis is a chronic gynaecological disease commonly associated with pain and infertility, and significantly associated with retrograde menstruation . However, it is not well understood how normal peritoneum and eutopic endometrium may be involved in this pathogenesis. The aim of our study was to examine differential messenger RNA (mRNA) expression of relevant cytokines, aromatase, metalloproteases, growth and adhesion factors in normal peritoneum and in endometrium from women with endometriosis when compared with women without the disease during the menstrual and luteal phases of the cycle.

Peritoneal&endometrial tissues were selected from 35 patients during luteal (n=20)&menstrual(n=15)phase. Patients either had a laparoscopically normal pelvis(controls,n=11)orhad a confirmed endometriosis(n=24)as per ASRM stageI-II(n =12)&stageIII-IV(n=12).The mRNA levels of vimentin,vascular cell adhesion molecule(VCAM-1),integrins $\alpha 1 \beta 1$ & $\alpha 3 \beta 1$,interleukin(IL-1 β ,IL-6,IL-8),tumor necrosis factor(TNF- α),transforming growth factor(TGF- $\beta 2$),aromatase,metalloproteases (MMP)-3,regulated on activation normal Tcell expressed&secreted(RANTES),monocyte chemotactic protein(MCP-1)&intercellular adhesion molecule(ICAM-1)were evaluated using real-time RT-PCR.

Increased peritoneal mRNA levels of RANTES,VCAM-1,MMP-3,TGF- $\beta 2$,IL-6 & ICAM-1 and endometrial mRNA levels of MMP-3,TNF- α &IL-8 during menstrual phase were compared to luteal phase in women with endometriosis.During luteal phase endometrial IL-1 β & RANTES & peritoneal TNF- α & MMP-3 mRNA levels were increased in endometriosis compared with controls. During menstrual phase,increased endometrial expression of $\alpha 1 \beta 1$ & $\alpha 3 \beta 1$ integrin,combined $\alpha 1 \beta 1$ & $\alpha 3 \beta 1$ integrins, TNF- α ,IL-8,and MMP-3 mRNA levels & increased peritoneal expression of TGF- $\beta 2$,IL-1 β ,IL-6&ICAM-1 but decreased peritoneal MCP-1 mRNA levels in women with endometriosis when compared to controls

Increased cytokine mRNA expression in both normal pelvic peritoneum and in eutopic endometrium during menstruation may contribute to a pelvic inflammatory microenvironment favoring the development of endometriosis.