

Association of MMP-2,-9 Overexpression and Imbalance PGR-A/PGR-B Ratio in Endometriosis

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Abstract : Introduction: Matrix MetalloProteinases (MMPs) degrade extracellular matrix components to provide normal remodeling and contribute to pathological tissue destruction and cell migration in endometriosis. It is accepted that MMPs are resistant to suppression by progesterone in endometriotic tissues. The physiological effects of progesterone are mediated by its two progesterone receptor (PGR) isoforms, namely PGR-A and PGR-B. The capacity of progesterone affect to gene expression is dependent on the PGR-A/PGR-B ratio. The imbalance ratio in endometriotic tissue may be an important mechanism to be resulted in Progesterone resistance and modify progesterone action via differential regulation of specific progesterone response genes and improve endometriosis disease. Material and methods: RNA was extracted from twenty ectopic (endometriotic) and eutopic (endometrial) tissue samples of women undergoing laparoscopy for endometriosis and 20 healthy fertile women at Royan Institute, Tehran, Iran. Analysis of PGR-A, PGR-B, MMP-2 and MMP-9 mRNA expression was performed using Real-time PCR in ectopic and eutopic tissues. Then, Statistical analysis was calculated according to the $2^{-\Delta\Delta CT}$ equation for all samples. Results: Quantitative RT-PCR analyses of PGR-A and PGR-B mRNA revealed that there were differences in both isoformes of PGRs mRNA expressions between ectopic and control eutopic tissues. We were able to demonstrate low expression levels of PGR-B isoforms in ectopic tissues. Although, PGR-A expression was significantly higher in the same ectopic samples compare to controls. This method permitted us to demonstrate significant overexpression of MMP-2 and MMP-9 in ectopic samples compared to control endometrial tissues, as well. Conclusions: Our data suggest that low expression levels of PGR-B and overexpression of PGR-A can alter PGR-A/PGR-B ratio in endometriotic ectopic tissues. Imbalance ratio of PGRs in endometriotic tissue may be able to consequence MMP-2 and MMP-9 overexpression which can be important in pathogenesis and treatment of disease.

Keywords : endometriosis, matrix metalloproteinases, progesterone receptor -A and -B, PGR-A/PGR-B ratio

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