IMMUNOLOCALISATION OF INTERLEUKIN-11 AND ITS RECEPTOR IN ENDOMETRIUM OF INFERTILE WOMEN DURING THE IMPLANTATION WINDOW

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The human endometrium is normally a hostile environment to embryo implantation except for a limited phase of the menstrual cycle known as the “window of receptivity”. Mice with a null mutation in the gene encoding for the interleukin (IL)-11 receptor alpha (Rα) are infertile due to a failure of embryo implantation. In the human endometrium IL-11 localises in a pattern suggesting a role in human fertility. The aim of this study was to examine the temporal and spatial location of IL-11 and IL-11Rα in endometrium from infertile women (infertile) and women with normal menstrual cycles and no known endometrial dysfunction (normal). Immunohistochemistry was performed on tissues collected between 5 and 10 days after ovulation. IL-11 and IL-11Rα immunoreactivity was absent in a sub-population of tissues from infertile women. In the infertile tissues that exhibited staining, IL-11 stained minimally in glandular and luminal epithelial cells, stromal cells, and vascular smooth muscle and endothelial cells. Similarly, IL-11Rα immunoreactivity was minimal in all major cellular compartments, with the luminal epithelial cells and vascular smooth muscle cells showing the lowest staining. By contrast, IL-11 and IL-11Rα immunostaining was found in all normal tissues. Furthermore, staining for IL-11 and IL-11Rα was high in the glandular epithelial cells of the normal tissues. Moderate to low staining for IL-11 and IL-11Rα was seen in stromal and vascular endothelial cells, while low staining was apparent in the vascular smooth muscle and luminal epithelial cells. Staining for IL-11 and IL-11Rα was overall markedly higher in normal compared to infertile tissues. These data suggest a role for IL-11 in the preparation of a receptive endometrium, which is critical in the establishment of pregnancy.