P-20 Neurogenic Participation in the Experimentally Induced Ovarian Dysfunction is Relieved by an Herbal Formula

[1]Kim JW, [1] Lee JA, [1] Lee KH, [1] Seo EJ, [2]Jun YS , [2]Noh JS, [2]Choi SM, [2]Choi BC, [3]Pak SC, [4]Lim SC

[1]Laboratory of Reproductive Medicine, [2]Center for Recurrent Miscarriage and Infertility, Creation and Love Women's Hospital, Gwangju 502-210, Korea, [3]Hamilton College of Oriental Medicine, Hamilton, New Zealand, [4]Department of Pathology, Chosun University Medical School, Gwangju, 501-759, Korea

Objectives: A type of polycystic ovary (PCO) resembling some aspects of human polycystic ovarian syndrome can be induced in the rat with a single injection of long-acting estradiol valerate. Among several theories behind the development of PCO, the involvement of sympathetic nervous system draws much attention. An herbal medicine is known to relieve the abnormal symptoms of PCO. The objective of this study was to determine the effects of an herbal medicine by microscopic observation of ovarian morphology and analyzing immunohistochemical nerve growth factor (NGF) expression in the brain tissues and the ovaries.

Materials and Methods: Thirty-two female adult rats received either a single i.m. injection of estradiol valerate (EV, Sigma, USA) for the induction of PCO (EV control) or sesame oil (0.2 ml/rat, Sigma, USA) for the control (Oil control). For the fully developed PCO, the dose of 4 mg of EV and timing of 60 days after injection were chosen. Herb experts purchased all herbs used in this study in a local market with confirmation of origin. Two different herbal formulas were used in the present study. The administration of herbal medicine was done every other day for 60 days. The morphological changes of ovaries from herbal medicine treatment were compared to those from oil control group and EV control group. This study was also conducted to prove the possible hypothesis of neurogenic participation in the form of NGF in the pathology of ovarian dysfunction. The NGF was analyzed in the central nervous system and ovaries by immunohistochemistry.

Results: The ovaries of EV control animals showed the cystic follicles that are consistent with the fully-developed PCO. In the herbal treated group, corpora lutea and corpora albicantia were significantly increased while the number of cystic follicles was obviously decreased compared with the EV control. With administration of herbal medicine, thecal NGF immunoreactivity was decreased in follicles, not in stromal cells. The intensity of NGF staining in pituitary and hippocampus was also decreased compared with that of EV control tissues though it was not significant. In general, there was no significant difference of NGF immunoreactivity in all the organs that were observed between two herbal treated groups.

Conclusions: The main findings of the present study were 1) PCO was fully developed in the rat with a single intramuscular injection of estradiol valerate, 2) PCO resulted in the expression of NGF in the ovaries and the brain tissues, and 3) herbal medicine administration significantly decreased the elevated NGF staining in the ovaries without affecting the brain tissues significantly.