Activation of ovarian sympathetic nerves in polycystic ovary syndrome

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Polycystic ovarian syndrome (PCOS) is one of the most common human ovarian pathologies affecting women of reproductive age. Despite extensive investigation, the etiology of PCOS remains poorly understood. Experimentally, a PCO-like syndrome can be induced in rodents by a single dose of the long-acting estrogen, estradiol valerate (EV). We have used this model to examine the possibility that PCOS is associated with derangement of the sympathetic control of the ovary. The release of newly incorporated norepinephrine (NE) from ovarian nerve terminals in response to transmural stimulation of the gland increased significantly before the formation of cysts (30 days after EV injection) and remained elevated at the time when cysts form (60 days). The increase in evoked NE release was accompanied by an augmented NE content and enhanced incorporation of [3H]NE into ovarian tissue; both of these changes had been initiated by 30 days after EV treatment and became unambiguous at the time of cyst fo