

# Stress promotes development of ovarian cysts in rats: The possible role of sympathetic nerve activation

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Activation of the sympathetic innervation precedes the induction of polycystic ovaries in rats given estradiol valerate (EV). The mechanism of induction by EV may thus involve both direct and neurogenic components. We tested this hypothesis using a combined cold and restraint stress to induce an increase in sympathetic tone, including that of the ovarian sympathetic nerves. Three weeks after the start of stress we found: 1. An increase in the content of norepinephrine (NE) in the celiac ganglion. 2. An increase in the release of NE from the ovary. 3. An unchanged NE uptake by the ovary. 4. An unchanged content of NE in the ovary. The ovarian content of neuropeptide Y (NPY) (colocalized with NE) was significantly decreased. These results suggest that NE synthesis and its secretion are increased during this period and correlate with the increase in secretion of androgens and estradiol, the development of precystic follicles, and a decrease in the ovulatory rate. After 11 wk, NE release h