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NEUROVASCULAR RELATIONSHIPS IN UTERINE WALL IN ADENOMYOSIS COMPLICATED WITH PELVIC PAIN SYNDROME

ABSTRACT. Background. Pelvic pain is one of the most frequent complications of adenomiosis. Objective. To investigate the neurovascular relationships in uterine adenomyosis complicated with pelvic pain syndrome. **Methods**. Material was received after hysterectomy from 16 patients of reproductive age with diffuse adenomyosis of 2-3 degrees in the phase of proliferation. The group of comparison included the material obtained from patients with asymptomatic leiomyoma. Morphological and immunohistochemical methods were used. **Results**. An increase in nerve number and density was demonstrated in perivascular region around ectopic endometrium as well as in zones of myometrium remodeling in patients with adenomyosis ($p < 0,001$). Nerve growth was associated with degenerative changes in the uterine vessels, lack of α-SMA expression and reduction of estrogen receptors in arteries. These changes were accompanied with stimulation of angiogenesis and increased expression of vascular endothelial growth factor VEGF ($p<0,01$). The main sources of VEGF were ectopic endometrium epithelium and inflammatory cells in areas of myometrium remodeling. **Conclusion**. Remodeling of vascular bed and endometrium on the background of dystrophic changes of large vessels and increased VEGF expression could be one of the factors determining nerve growth in uterine adenomyosis.

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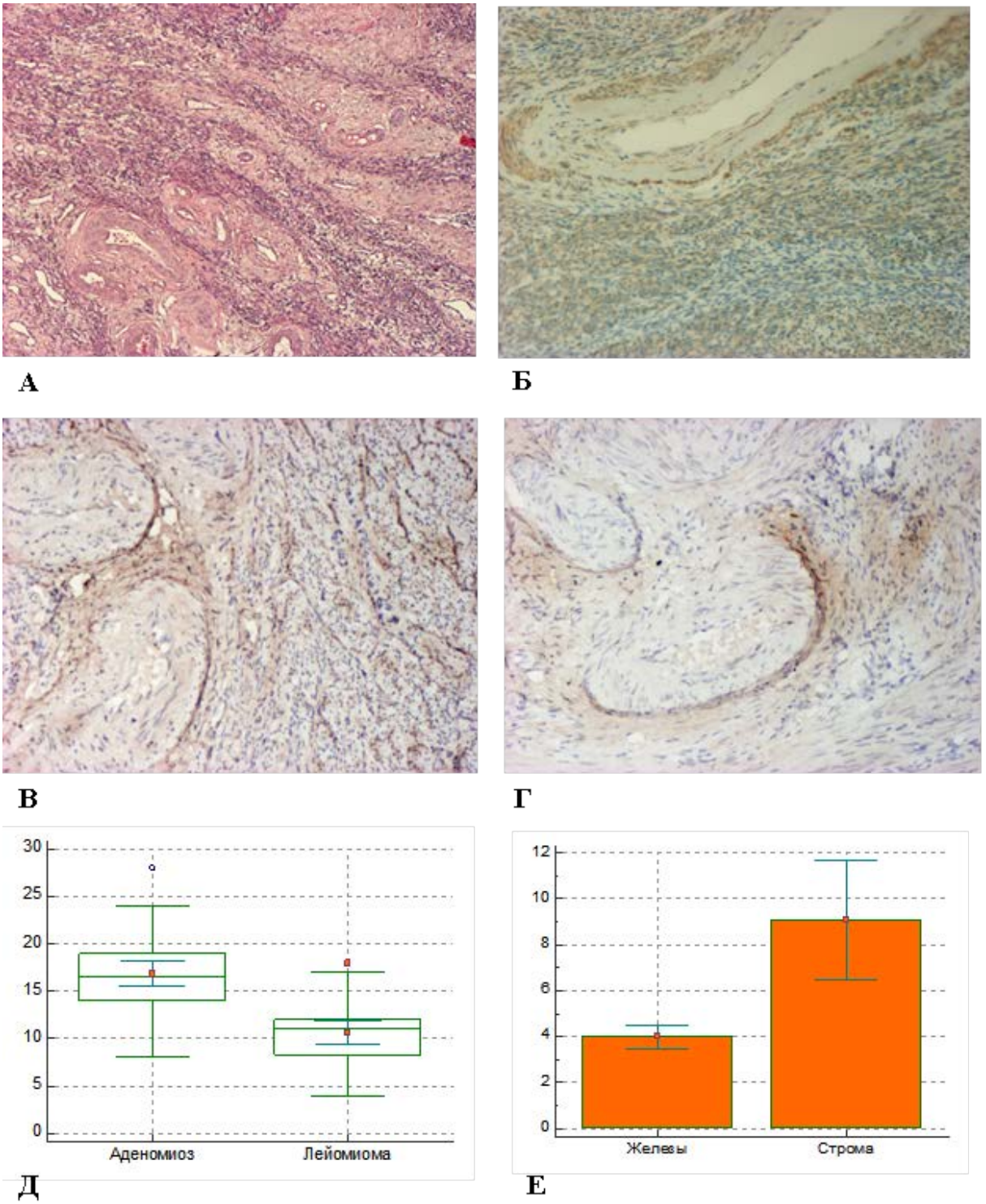

Fig. 1. Neurovascular relations in the uterine wall. А – dystrophic changes and hyalinosis of the uterine vessels in adenomyosis (Hematoxylin&Eosin staining, ×200). Б – loss of α-SMA expression in the wall of uterine vessels. В – increased number of perivascular and interstitial nerve fibers in female patient with adenomyosis. Г – perivascular nerves in myometrium in leiomyoma (Immunohistochemical method, monoclonal antibodies against neurofilaments). Д – number of nerve fibers in adenomyosis and leiomyoma. Е – number of nerves around the ectopic endometrium (glands) and around the vessels (stroma) of myometrium in adenomyosis.

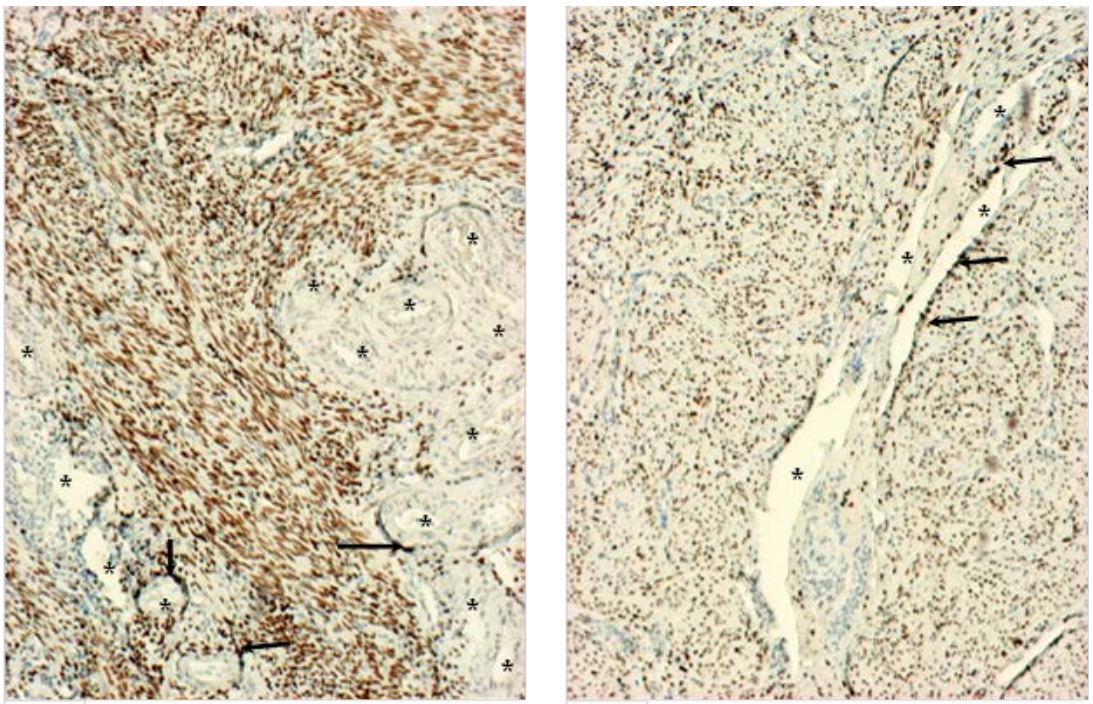

Fig. 2. Absence of ER expression in the walls of uterine vessels (asterisks). Individual cells of the vessels and stroma show high ER expression (arrows). Note: Immunohistochemical investigation with monoclonal antibodies against ER. А – vascular layer of endometrium, decreased ER expression in the vascular wall, individual immunopositive cells in the adventitia of large vessels (arrows), Б – ER-positive cells in the walls of small myometrial vessels, ×200.

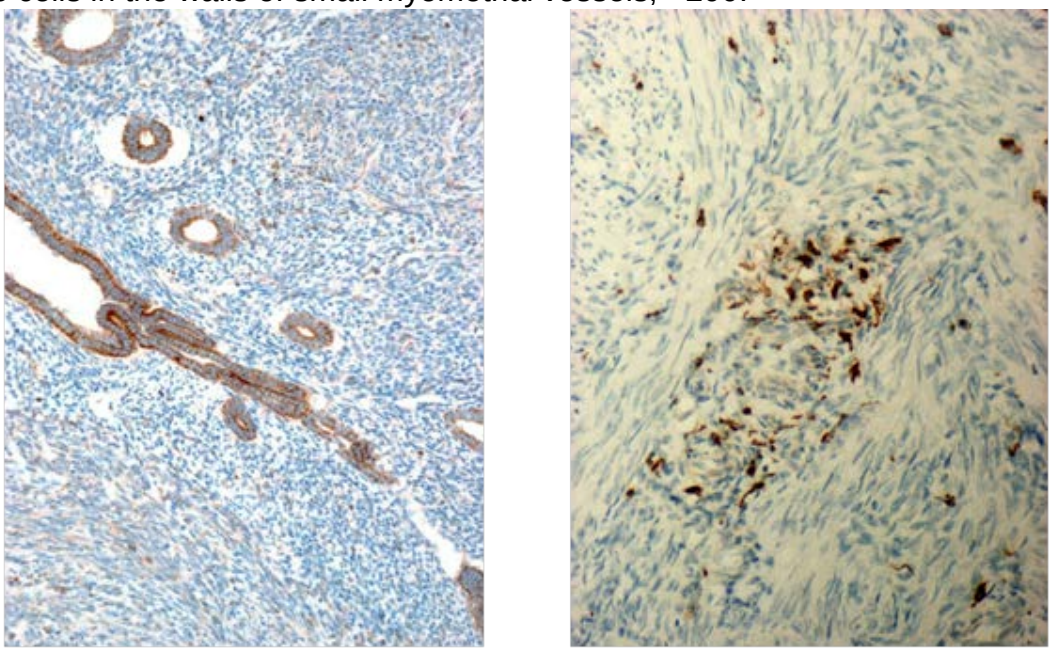

Fig. 3. VEGF expression in the foci of adenomyosis (А) and perivascularly in the areas of myometrium remodeling (Б). Immunohistochemical investigation with monoclonal antibodies against VEGF, ×200 (А), ×400 (Б).

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