DIMINISHED OVARIAN RESERVE IN WOMEN WITH ENDOMETRIOMA: CONCERNS FOR FERTILITY PRESERVATION IN WOMEN WITH ENDOMETRIOSIS

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Purpose: Diminished ovarian reserve after surgery had been recognized as serious obstacles in the treatment of endometriosis-associated infertility. Fertility preservation may be considered in women with severe disease. On the other hand, the formation of endometrioma per se could be the cause of diminished ovarian reserve but the mechanism of follicular loss is largely unknown. In this study, we evaluated histological alterations of ovarian cortex contains early follicles derived from ovaries with endometrioma.

Methods: Laparoscopic ovarian cortex biopsy was performed in women with endometrioma under 40 years. Tissue was fixed with Bouin’s solutions and embedded with paraffin. Serial sections were made at 5µm intervals and stained with hematoxylin and eosin at 50µm intervals. Early follicles in cortical samples were morphologically classified according to Gougeon’s criteria. Follicular densities were calculated. Size of early follicles was measured by image analyzing software. PCNA and activated caspase-3 immunostaining were performed. These results were compared with cortex derived from contralateral ovaries without cysts.

Results: Morphologically atretic follicles were significantly increased in cortex derived from ovaries with endometriomas. These follicles showed cytoplasmic immunolocalization of activated caspase-3. The proportion of growing follicles to dormant primordial follicles was significantly increased, which in accordance with significant increase of early follicles with PCNA-positive granulosa cells. Diameters of primordial follicles were decreased.

Conclusions: Ovarian reserve can be demised by activated follicular recruitment and atresia of early follicles along with the progression of endometriosis. To optimize the efficacy of fertility preservation, early medico-surgical intervention should be considered.