

## **Immunohistochemical approach to an endometrial cancer case associated with adenomyosis uteri**

—  $\alpha$ -Smooth muscle actin ( $\alpha$ -SMA) 1A4 behavior on the before mentioned postmenopausal woman—

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Hitherto I surveyed on endometriosis through various methods such as electronmicroscopy(em), of TEM(transmission em<sup>1)</sup>) and SEM(scanning em) and also the estrogen receptor(ER)<sup>2)</sup>. I tried moreover the element X-ray microanalysis on SEM<sup>3)</sup>. These were used to study mainly endometriotic gland itself for over 3 decades. This time rather I viewed or put my eyesight on the endometriotic glandular environment, such as surrounding stroma composed of so called spindle shaped cells intermingled with smooth muscle forming blood vessels. So to speak I searched for possible environmental factors affecting endometriotic glandular behavior. Immunohistochemistry that I learned at my trainee period of gynecologic pathology of Columbia University<sup>4)</sup> in 1978 through 79 for hCG and CEA to gynecologic surgery cases was used.

-SMA is a chief component of smooth muscle. Anti -SMA antibody is expected to be found in the uterine muscular layer including vascular smooth muscle in both of proliferative and secretory phase of the endometrium. Nap AW et al stained -SMA in vessels of endometriosis in nude mice and examined the effect of treatment of antiangiogenic agents<sup>5)</sup>.

Particularly at this time attention was paid to the endometrial stroma where I eager to learn -SMA localization, if possible its degrees.

### **Materials and methods)**

On a postmenopausal adenomyosis that was presented<sup>6)</sup> as a case report which had endometrial cancer in adenomyosis in this bulletin of 2008. I stained for the immunohistochemical (DAKO) mouse -SMA 1A4 which was diluted to 1:100 and analyzed at which parts, this should be stained and not.

### **Results)**

Uterine gland and stroma were tried and examined for staining of immunohistochemical -SMA. Glandular epithelium were all negative for -SMA whatsoever it might be orthotic(also in atrophic ones) or ectopic(endometriotic and cancerous, respectively). -SMA was slightly positive in periglandular stroma,

Table 1.  $\alpha$ -SMA positivity in various sites in uterine stroma

endometrial gland	carcinoma stroma	adenomyosis gland	stroma	carcinoma in gland	adenomyosis stroma	endometrium gland	stroma	myometrium
-	peri+	-	peri+	-	peri+	-	-	+

peri: periglandular

mostly in narrow tissues surrounding gland of adenomyosis and cancer. Muscular tissue showed distinctly positive as a control stain and compared to the endometrium. Repeatedly cancer cells as well as adenomyotic gland and normal uterine gland showed no evidence of ever  $\alpha$ -SMA positivity in the marvelous contrast or negative control as a whole (Table 1). Difference of positivity between ortho and ectopic glandular stroma (particularly periglandular) was clearly shown, so to speak most distinct is that  $\alpha$ -SMA was positive in stroma surrounding cancer and adenomyotic gland and never in orthotic endometrial stroma with exception of tissues surrounding blood vessels.

### Discussion)

One of the reason I've selected  $\alpha$ -SMA is the feeling the necessity of angiogenesis throughout the formation of smooth muscle cells and that beforehand correlation between cancer and endometriosis (adenomyosis) was not detailed through simple histologic evidences including EM findings nor receptor. This urged me to investigate the  $\alpha$ -SMA staining in stroma.

Here most attractive is that  $\alpha$ -SMA was positive for periglandular stroma in adenomyosis and even in cancer within adenomyotic gland, although it was not shown in eutopic endometrium of which ever proliferative or secretory. This would suggest that adenomyotic gland is different from the orthotic gland in the view point of surrounding environmental structures mimicking the surrounding tissue or so to speak stroma. Moreover the positivity of  $\alpha$ -SMA of endometriosis as well as stratum surrounding cancer cells would reveal some hints that adenomyotic gland has somewhat neoplastic character. On this stroma one needs to investigate in future whether this would be the straightforward stroma or simply periglandular space. Further check up by such as an immuno-electronmicroscopy to these cases is recommended.

### Conclusion)

I examined  $\alpha$ -SMA which is the component in smooth muscle myoepithelium to search for the environmental behavior or moreover to the role of histogenesis of the endometriosis.

Speaking of the probable stroma in periglandular space,  $\alpha$ -SMA is positive in stroma of adenomyosis and cancer and not in native (orthotic) endometrial stroma. This would suggest that adenomyotic gland and cancer cells had different environment of stroma from that of the endometrium. Another case of cancer

associated adenomyosis should be tried for  $\alpha$ -SMA stain. Thus further investigations in stroma between cancer and adenomyosis are also recommended.

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