Myofibroblasts Polarised Arrangement and TGFβ Receptors Spatial Expression in the Peritoneal Endometriosis - Reappraisal of the Microenvironment of the Superficial Peritoneal Endometriosis

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Context

The shedded endometrium is affected by the peritoneal fluid (PF) in endometriosis (EM) patients in its retro-grade journey to the abdominal cavity. It implants on the peritoneum and develops through a TGFβ1-mediated EMT process into EM and myofibroblasts appear. Objectives

Do the myofibroblasts and TGFβ receptors follow a spatial arrangement in the peritoneal EM (PEM)? Can PF, oestrogen (E2) and TGFβ1 affect the proliferation rate (PR) of fibroblasts and epithelial cells? Does TGFβ1 level differ in PF in EM patients than control? Patients 86 premenopausal patients (EM = 55 and non-EM = 31) were included. PF, superficial PEM, healthy peritoneum (HP) and unaffected peritoneum from EM patients were collected during laparoscopy at Charite University of Medicine. Interventions

Immunohistochmeistry staining for TGFβ receptor 1, 2, 3, collagen I and calponin was done. PR of L-929 and 12Z cell lines incubated with PF, E2 and TGFβ1 was studied. ELISA kit for measuring TGFβ1 level in PF in EM and control patients was used. Results

The collagen I was higher expressed in the peripheral peritoneum of EM and tend to decrease towards the centre of the lesion while calponin, TGFβR1 and 3 showed the reverse. Both were higher expressed in EM than non-EM. The unaffected peritoneum from EM patients and the HP did not show any difference. PF from EM patients as well as E2 stimulated PR of L-929 cell line, while TGFβ1 inhibited that of 12Z cell line. TGFβ1 level was indifferent in both groups. Conclusion

Superficial PEM exhibits a unique microenvironment with spatial arrangement of both the myofibroblasts and TGFβ receptors. The centre exhibited more contractile phenotype of the myofibroblasts and changes into collagen I - secretory type towards the periphery of the lesion. While PF and E2 favour the profibrotic evolution of the lesions, TGFβ1 mediates the transformation process.