ABSTRACT

PROGRESSIVITY MECHANISM OF DISTRESS ENDOMETRIOSIS TISSUE THROUGH INTERACTION OF MIF, HSP70, Akt, c-Myc AND CD44 IN MESENCHYMAL STEM CELL

(A Psychoneuroimmunology’s Approach of Stem Cells in Endometriosis-Modelled Mice)

Introduction: Progression of endometriosis tissue was found in patients with endometriosis experiencing distress. The existence of distress has been shown to increase the degree of progression of endometriosis but until now the mechanism of progression of endometriosis tissue due to distress can not be explained. The study aims to reveal the mechanism of endometriosis tissue progression with distress through interaction of MIF, HSP70, Akt, c-Myc and CD44.

Methods: There was experimental laboratory study using randomized separated pretest-postest control group design. This study used female Mus musculus aged two month as endometriosis animal model. The mice were grouped into three groups: Pretest (K1), posttest with distress condition (K2) and posttest with eustress condition (K3). Stressor was provided with Porsolt forced swim test (PST) six minutes a day for 10 days. Examination of protein expression was performed with immunohistochemistry and the size of endometriosis tissue measured by image ruster2 software. Data were processed with multivariate analysis of variance (Manova) and path analysis.

Result: There were significant increase in expression of MIF, HSP70, c-Myc and size of endometriosis tissue on distress group than the eustress group. (MIF: 9,66±2,78 vs 5,56±3,18, p=0,014, δ=4,10); (HSP70: 4,24±1,80 vs 1,48±0,99, p=0,000, δ=2,76); (c-Myc: 1,93±0,40 vs 0,72±0,49, p=0,000, δ=1,21); (size of endometriosis tissue: 357,76±88,22 vs 169,80±121,96, p=0,000, δ=187,96). However, distress condition did not improve expression of Akt (p=0,052) and CD44 (p=0,509) significantly (p>0,05). Through path analysis showed influence between distress condition to HSP70 (b=0,665; Tstat=5,291), HSP70 to c-Myc (b=0,314; Tstat=2,150) and c-Myc to size of endometriosis tissue (b=0,517; Tstat=3,893).

Conclusion: The distress condition may increase expression of MIF dan HSP70 to cause changes in the peritoneal microenvironment becomes more proinflammatory. These conditions resulted activating of c-Myc at mesenchymal stem cell (MSC). Activation of c-Myc cause MSC can proliferate and differentiate to improve the size of endometriosis tissue further.

Keywords: endometriosis, distress, HSP70, c-Myc, MSC