**Mesenchymal stem cells, unlike SVF, led to improvement of induced endometriosis lesions and inflammatory conditions in mice**

Zahra Mahdavi Rad .Amaneh Mohammadi Roushandeh .Arash Zaminy

Burn and regenerative medicine research center, School of medicine, Guilan University of medical sciences, Rasht, Iran

**Objective:** Endometriosis is a chronic debilitating inflammatory condition characterized by the presence of endometrial tissues outside the uterine cavity. Pelvic soreness and infertility are the usual association. Due to the poor effectiveness of current therapies, More studies are needed to find an effective treatment. In recent years, cell therapy has been associated with significant and promising results. Stromal Vascular Fraction (SVF) derived from adipose tissue includes heterogeneous cells that have anti-inflammatory effects; however, their efficiency in endometriosis cases is still controversial. Also, Mesenchymal stem cell (MSC) therapy is considered a novel therapy for endometriosis due to its anti-inflammatory and anti-proliferative effects. In this study, we investigated and compared the effect of SVF and MSC on endometriosis lesions and their environment.

**Methods:** twenty-four female mice 20 to 25 g were randomly divided into 3 groups: 1, endometriosis group(control); established by transplanting xenograft endometrial tissue from the rat to the peritoneal surface of the anterior abdominal wall of mice; 2, SVF injected group; 3, MSC injected group; SVF and MSC were injected on the 5th day after induction of endometriosis. The proliferative activity of the endometriosis lesions was evaluated through Ki67 staining. For evaluation of inflammatory status, the concentration of TNF\_α and IL\_6 were measured in the peritoneal fluid by ELISA, Also H&E and Perl’s staining were also performed for other histological studies.

**Results:** The size and proliferative activity of endometriosis lesions, and concentration of TNF\_α and IL\_6 in peritoneal fluid in the MSC injected group were better and significantly reduced compared with the control group but the lesions in the SVF injection group significantly worsened and progressed. (P<0.05)

**Conclusion:** Mesenchymal stem cells, unlike the stromal vascular fraction, probably can be considered as an effective adjuvant therapeutic strategy due to their anti-inflammatory and anti-proliferative effects on endometriosis lesions and their inflamed microenvironment.

**Keywords:** Mesenchymal stem cell; Endometriosis; Stromal Vascular Fraction; inflammation; interleukin