P-336 The role of endoplasmic reticulum stress in endometriosis; preliminary results

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Study question: Can X-box binding protein 1 (XBP-1) be used in evaluation of endoplasmic reticulum (ER) stress in endometriosis patients?
Summary answer: High levels of XBP-1 among endometriosis patients indicate an association between ER stress and endometriosis.
What is known already: ER is responsible for protein folding, lipid synthesis, and calcium homeostasis. ER stress occurs due to the accumulation of unfolded or misfolded proteins in the ER. ER stress causes the activation of several signal transduction cascades, defined as the unfolded protein response (UPR). In the studies conducted with ectopic endometrial tissue and cells, it was reported that UPR plays a role in the pathogenesis of endometriosis. The XBP-1 is a transcription factor involved in UPR, where it regulates ER stress-mediated apoptosis. XBP-1 is also responsible for endometrial cell migration, which is also a part of the pathogenesis of endometriosis.
Study design, size, duration: This prospective case-controlled study was conducted at University of Health Sciences Turkey, Istanbul Kanuni Sultan Suleyman Training and Research Hospital Department of Obstetrics and Gynecology between March 2020 – August 2020. A total of 60 subjects were included in the study. All patients gave their written informed consent before their enrollment in the study.
Participants/materials, setting, methods: 30 endometriosis patients aged 18-45 years were included in the study group. Patients with a history of ovarian surgery, endocrine, autoimmune and metabolic disorders, and hormonal treatment during the previous three months were excluded. 30 healthy subjects without endometriosis were included in the control group. Endometriomas were measured with transvaginal ultrasonography and pain was evaluated with visual analogue scale (VAS). XBP-1 levels were determined from serum samples using Human XBP-1 ELISA Kit (Elabscience Co., USA).
Main results and the role of chance: The mean age of the control group was 28.33±2.49, and the study group was 27.76±2.45 (p=0.374). The mean endometrioma volume in the study group was calculated to be 9.9± 9.05. The mean XBP-1 level in the control group was 1008.31± 329.05, whereas this level in the study group was significantly higher (2710.65±1484.13, p<0.001). When the study group was divided according to VAS scores into two groups, the mean XBP-1 level, and endometrioma volumes were significantly higher in the group with VAS scores > 6 (p <0.001 and p=0.03 respectively). A receiver operating curve (ROC) analysis was conducted in the study group. The area under the curve AUC for XBP-1 levels was 91% (95%CI: 0.86–0.96, p <0.001) for the cut-off value of 1279.52 with a sensitivity 87.2%, specificity 86.7%, PPV: 90.4%, NPV: 82.5%, +LR: 6.5, -LR: 0.1. The AUC for VAS scores >6 was 96.2% (95%CI: 0.93–0.98, p<0.001) for the cut-off value 2227.71, with a sensitivity 90% and a specificity 91.1%, PPV: 87.1%, NPV: 96.1%, +LR: 10, -LR: 0.1.
Limitations, reasons for caution: A limitation of this study was the methodology of serum sample collection. Since there are no data available on the timing of sample collection with regard to the menstruation cycle of the subjects, samples were collected at the first consultation of the patients without considering the date of their cycle.
Wider implications of the findings: In this study, XBP-1 levels in the endometriosis group and also among patients with VAS scores of >6 were significantly higher. This association between XBP-1 and endometriosis and the positive correlation with pain indicates that XBP-1 can be a potential biomarker, especially in the presence of severe pain symptoms
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