Summary

Endometriosis is a common gynecological disease, occurring in about 10% of all women and up to 60–80% of women with infertility problems or pelvic pain. Despite a number of theories concerning the origin of endometriosis the precise pathogenic mechanisms remain enigmatic. Proposed mechanisms include genetic predisposition, involvement of the immune system, changes in the peritoneal fluid, peritoneum and endometrium, and retrograde menstruation.

The presence of neovascularization has been well established in endometriotic implants, and larger and more active implants have been observed in well-vascularized areas than in poorly vascularized ones. Moreover, red peritoneal lesions and ovarian endometriosis show higher concentrations of VEGF. There is evidence suggesting a strong correlation between VEGF levels and menstrual cycle phases, with possible implications for the development of endometriosis. Variations in VEGF mRNA throughout the menstrual cycle have been observed in endometrial tissue, with increased expression during the secretory and menstrual phases. In addition, analysis of endometrial tissue and peritoneal fluid samples showed higher mean VEGF levels during the late secretory phase in women with endometriosis than in those without the disease.

Our study included 25 women aged from 18 to 40 years, of regular menses, followed in infertility clinic and they were arranged for laparoscopic examination for primary infertility and suspected endometriosis (cyclic or chronic pelvic pain, dysmenorrhea, dyspareunia or ultrasound examination). They were not taking any type of hormonal treatments in the past 3 months prior surgery, no signs of ovarian failure and no history of ovarian cancer. Venous blood samples were taken at time of surgery before anesthesia and the day of menstrual cycle was recorded for every patient. Then the patients are divided according to results of histopathology into 2 groups, the study (histo-pathologically proven pelvic endometriosis) group and control (pelvic lesion free) group. Serum concentrations of VEGF were measured in the two groups using specific commercial sandwich enzyme-linked immune-sorbent assays (ELISA) according to manufacturer's protocols (Quantikine; R&D systems Inc, Minneapolis, MN, USA).

The objective of this study was to determine whether measuring VEGF levels could be useful in the diagnosis of endometriosis in patients with clinical indications of the disease and to evaluate the association between VEGF levels in the serum and the presence of pelvic endometriosis.

Data were statistically described in terms of range, mean ± standard deviation (± SD), median, frequencies (number of cases) and percentages when appropriate. Comparison of quantitative variables between the study groups was done using Mann Whitney *U* test for independent samples. For

comparing categorical data, Chi square (χ^2) test was performed. Exact test was used instead when the expected frequency is less than 5. Accuracy was represented using the terms sensitivity and specificity. Receiver operator characteristic (ROC) analysis was used to determine the optimum cut off value for the studied diagnostic markers. A probability value (*p* value) less than 0.05 was considered statistically significant. All statistical calculations were done using computer programs Microsoft Excel 2003 (Microsoft Corporation, NY, USA) and SPSS (Statistical Package for the Social Science; SPSS Inc., Chicago, IL, USA) version 15 for Microsoft Windows.

The results of the study revealed that serum VEGF concentrations measured in the endometriosis (study) group were significantly higher than those of pelvic free endometriosis (control) group.

The most sensitive and specific cut-off value for serum VEGF concentration predicting endometriosis in study group (cases) was (174 pg/ml), with specificity of (99%), sensitivity of (100%).