

Low plasma soluble TNFR1 levels in symptomatic women with endometriosis

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Introduction: Tumor necrosis factor (TNF) is a proinflammatory and angiogenic factor produced by activated macrophages. TNF acts through the cell membrane receptors TNFR1 and TNFR2. However, there are soluble forms of TNFR1 (STNFR1) and TNFR2 (STNFR2) that play an important role in regulating TNF activity through competition with its receptors. The aim of this study was to evaluate whether TNF and/or its soluble receptors are useful to detect endometriosis in women undergoing laparoscopy for gynecological complains.

Patients and Methods: This was a prospective, controlled, cross-sectional study including 75 consecutive women scheduled for gynecological laparoscopy due to chronic pelvic pain, infertility, or a pelvic image suggestive of endometrioma. Plasma TNF and soluble TNF receptors (STNFR1 and STNFR2) were measured by flow cytometry with the Cytometric Bead Array Human TH1/TH2 Kit (BD Biosciences).

Results: Women ultimately proven to have endometriosis had lower pre-operative plasma levels of STNFR1 (median 81 pg/mL vs. 121 pg/mL, $P < 0.05$), resulting in higher TNF/STNFR1 ratios compared to those without endometriosis (0.055 vs. 0.033, $P < 0.05$). Using the cut-off < 108 pg/ml for plasma STNFR1 to detect endometriosis in this setting, the sensitivity was 51.6% (95% CI 35%-68%), the specificity was 75.0% (95% CI 61%-85%) and the positive likelihood ratio was 2.1 (95% CI 1.1-3.8). The area under the ROC curve was 0.647 (SE 0.065; 95% CI 0.519-0.774; $p = 0.031$). Plasma TNF and STNFR2 levels were similar in women with and without endometriosis.

Conclusion: Plasma STNFR1 levels are decreased in symptomatic women with endometriosis, but it has low sensitivity and specificity as a diagnostic biomarker in this clinical context. The lower plasma STNFR1 levels may increase the bioavailability of TNF, thereby contributing to the systemic low grade inflammation associated with endometriosis.

Keywords : STNFR-I, endometriosis, inflammation, markers

Authors :

References : , , ,

Authors

FM REIS 1, AL ROCHA 1, EL VIEIRA 2, MC FERREIRA 1, AL TEIXEIRA 2,

1. Department of Obstetrics and Gynecology, UFMG, Belo Horizonte, BRAZIL

2. Department of Internal Medicine, UFMG, Belo Horizonte, BRAZIL

Authors (raw format)

REIS FM - email : reis.ufmg@gmail.com Institution : UFMG Department : Department of Obstetrics and Gynecology City : Belo Horizonte Country : BRAZIL Speaker : Yes

ROCHA AL - email : ana_lunardi@yahoo.com.br Institution : UFMG Department : Department of Obstetrics and Gynecology City : Belo Horizonte Country : BRAZIL Speaker : No

VIEIRA EL - email : ericalmvieira@gmail.com Institution : UFMG Department : Department of Internal Medicine City : Belo Horizonte Country : BRAZIL Speaker : No

FERREIRA MC - email : franca.marcia@gmail.com Institution : UFMG Department : Department of Obstetrics and Gynecology City : Belo Horizonte Country : BRAZIL Speaker : No

TEIXEIRA AL - email : altexr@gmail.com Institution : UFMG Department : Department of Internal Medicine City : Belo Horizonte Country : BRAZIL Speaker : No

