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There is no relationship between Paraoxonase serum level activity in women with endometriosis and the stage of the disease: an observational study

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Abstract

Background: Endometriosis is a chronic condition whose pathophysiology is unknown, but there is evidence suggesting a link with oxidative stress. Paraoxonase is a serum enzyme which circulates associated with high-density lipoprotein (HDL). It acts protecting HDL and LDL of lipid peroxidation. We aimed to compare the serum levels of PON-1 activity in women with endometriosis in different stages of the disease (minimal/mild and moderate/severe).

Methods: 80 infertile women with endometriosis diagnosed by laparoscopy/laparotomy with histologic confirmation of the disease were divided according to the American Society for Reproductive Medicine classification in minimal/mild (n = 33) and moderate/severe (n = 47) cases. Paraoxonase activity and arilesterase activity were measured by spectrophotometry. Body mass index and fasting glucose levels were also determined.

Results: The paraoxonase activity were 191.29 ± 22.41 U/l in women with minimal/mild endometriosis and 224.85 ± 21.50 U/l in women with moderate/severe disease ($P = 0.274$). Considering arilesterase level, the results showed 89.82 ± 4.61 U/l in women with minimal/mild endometriosis and 90.78 ± 3.43 U/l in moderate/severe disease ($P = 0.888$).

Conclusions: Evidence of lower paraoxonase activity in women with endometriosis was not found in this study. Besides, no difference was found considering minimal/mild or moderate/severe endometriosis.

Keywords: Endometriosis, Paraoxonase, Oxidative stress, Infertility, High-density lipoprotein

Background

Endometriosis is a chronic condition characterized by tissue histologically similar to the endometrium implants, grows and develops outside the uterine cavity associated with pelvic pain and infertility [1,2]. It affects 3-10% of women in their reproductive years and 20-50% of women with infertility [3]. The pathophysiologic mechanism is unknown, but some authors suggest a link with oxidative stress [4-9]. In the presence of pelvic endometriosis, peritoneal macrophages would be activated, increasing the production of reactive oxygen species (ROS) [4], one of the responsible for the inflammatory reaction observed in endometriosis [6]. Increased levels of lipid peroxidation markers in peritoneal fluids of women with endometriosis [10], like tumor necrosis factor (TNF) α, were found in previous published studies [9].

Those markers are chemotactic factors for monocytes and T-lymphocytes, such the T-helper, which immune response has been identified as a main factor in the development and progression of endometriosis [5]. An increase in the oxidation of low-density lipoprotein (LDL) was reported in endometriosis patients [8].

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