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[Serum markers of oxidative stress in infertile women with endometriosis].

[Article in Portuguese]

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Abstract

PURPOSE: to compare serum markers of oxidative stress between infertile patients with and without endometriosis and to assess the association of these markers with disease staging.

METHODS: this was a prospective study conducted on 112 consecutive infertile, non-obese patients younger than 39 years, divided into two groups: Endometriosis (n=48, 26 with minimal and mild endometriosis - Stage I/II, and 22 with moderate and severe endometriosis - Stage III/IV) and Control (n=64, with tubal and/or male factor infertility). Blood samples were collected during the early follicular phase of the menstrual cycle for the analysis of serum malondialdehyde, glutathione and total hydroxyperoxide levels by spectrophotometry and of vitamin E by high performance liquid chromatography. The results were compared between the endometriosis and control groups, stage I/II endometriosis and control, stage III/IV endometriosis and control, and between the two endometriosis subgroups. The level of significance was set at 5% ($p < 0.05$) in all analyses.

RESULTS: vitamin E and glutathione levels were lower in the serum of infertile women with moderate/severe endometriosis (21.7 ± 6.0 mMol/L and 159.6 ± 77.2 nMol/g protein, respectively) compared to women with minimal and mild endometriosis (28.3 ± 14.4 mMol/L and 199.6 ± 56.1 nMol/g protein, respectively). Total hydroxyperoxide levels were significantly higher in the endometriosis group (8.9 ± 1.8 µMol/g protein) than in the Control Group (8.0 ± 2 µMol/g protein) and among patients with stage III/IV disease (9.7 ± 2.3 µMol/g protein) compared to patients with stage I/II disease (8.2 ± 1.0 µMol/g protein). No significant differences in serum malondialdehyde levels were observed between groups.

CONCLUSIONS: we demonstrated a positive association between infertility related to endometriosis, advanced disease stage and increased serum hydroxyperoxide levels, suggesting an increased production of reactive species in women with endometriosis. These data, taken together with the reduction of serum vitamin E and glutathione levels, suggest the occurrence of systemic oxidative stress in women with infertility associated with endometriosis. The reproductive and metabolic implications of oxidative stress should be assessed in future studies.

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