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In vivo effects of curcumin and deferoxamine in experimental endometriosis.

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Abstract

BACKGROUND:

Endometriosis is one of the most common chronic gynecological diseases.

OBJECTIVES:

The aim of the study was to examine the effects of curcumin and/or deferoxamine on cell proliferation in a rat model of endometriosis.

MATERIAL AND METHODS:

Thirty female 12-week-old albino Wistar rats, weighing 200-250 g, were used in this study. All the rats underwent ovariectomy and 0.1-mg β-estradiol 17-valerate pellets were placed intraperitoneally. An experimental model of endometriosis was created in all the animals. To create the experimental model, an approximately 1-cm long section of the uterus was taken, primarily from the right horn of the uterus. Autologous fragments were then placed between the peritoneum and muscle. The animals were divided into 3 groups: Group A, treated only with the vehicle used for curcumin and deferoxamine; group B, treated with curcumin (100 mg/kg body weight); and group C, treated with deferoxamine + curcumin (100 mg/kg body weight). After biopsy samples were obtained, the sections were stained with hematoxylin and eosin. Immunostaining for cytokeratin-7 and proliferating cell nuclear antigen (PCNA) was performed. Blood iron levels were measured using a Perkin Elmer AAnalyst 800 Atomic Absorption Spectrophotometer.

RESULTS:

The endometrial implant size increased in Group A, but treatment with curcumin ($p = 0.01$) and deferoxamine + curcumin ($p = 0.007$) reduced the implant size. In ectopic endometrial epithelial cells, there were significant decreases in PCNA immunoreactivity between groups A and B ($p = 0.044$) and between groups A and C ($p = 0.033$).

CONCLUSIONS:

Treatment with curcumin alone and/or in combination with deferoxamine contributed to a reduction in implant size and cell proliferation in a rat endometriosis model. Iron-chelating agents may act in the same manner when used in women with endometriosis; however, further studies from different perspectives are still needed.