Title: EFFECT OF ENDOMETRIOSIS ON DNA INTEGRITY OF EMBRYO DEVELOPMENT AND THE ROLE OF L-CARNITINE IN PREVENTING DAMAGE

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Objective: Assess the effect of endometriosis on DNA damage of the embryos incubated in peritoneal fluid of patients with endometriosis and to evaluate the effectiveness of L-Carnitine (LC) in preventing DNA damage to the embryos.

Design: Experimental controlled study.

Materials and Methods: Group I included 120 (2 cell stage) frozen mouse embryos while group II included 120 (8 cell stage) mouse embryos. Each group was divided randomly into 4 subgroups 30 embryos each. Group I: incubated in the peritoneal fluid (PF) of patients with endometriosis. Group II: PF of patients with tubal ligation (control). Group III: HTF media. Group IV: PF of endometriosis supplemented with LC (0.6mg/mL). Cells were incubated for 48-72 hours at 37°C in 5%CO2. Morula and blastocysts were fixed using formaldehyde 3%. Apoptosis was analyzed by terminal deoxynucleotidyl transferase-mediated dUTP nick-end labeling (TUNEL) assay and confocal microscopy.

Results: PF of endometriosis significantly increased the level of apoptosis compared to the control groups (P = 0.036). Supplementation of L Carnitine to 2 cell stage embryos incubated in PF of endometriosis significantly prevented DNA damage (P<0.0001). Significant improvement in the level of apoptosis was seen in the 8 cell embryos when LC (0.6 mg/mL) was added to PF (P<0.001).
**Conclusions:** Endometriosis causes DNA damage of the embryos. LC prevents DNA damage of early stages of embryonic development. Its supplementation is a novel approach that can have significant clinical applications in the ART setting.

**Support:** None.

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