Effect of peritoneal fluid of infertile mild/minimal endometriosis and idiopathic infertility patients on *in vitro* mouse embryo development


**Objectives**: The cause of infertility associated with mild/minimal endometriosis and idiopathic infertility still remains an area of controversy. Our purpose was to evaluate: 1) the relationship of reactive oxygen species (ROS) and non enzymatic total antioxidant capacity (TAC) in the peritoneal fluid (PF) of infertile women with mild/minimal endometriosis and idiopathic infertility with those women who were fertile, and 2) to examine the effect of PF on *in vitro* cleavage of 2-cell mouse embryos and blastocyst development rate (BDR).

**Design**: Prospective study in a tertiary care facility.

**Material and Methods**: Peritoneal fluid was aspirated from cul-de-sac at laparoscopy. Levels of ROS and TAC were measured by chemiluminescence method. Group I consisted of PF samples from 12 infertile patients with mild/minimal endometriosis (n = 6) and idiopathic infertility (n = 6), and group II, consisted of PF samples from fertile patients undergoing tubal ligation (control, n = 6). A 10% concentration of PF was prepared and eight to ten 2-cell mouse embryos were cultured for 72 hrs to examine the BDR in an *in vitro* mouse embryo system

**Results**: Significantly lower levels of TAC were seen in the PF of infertile patients (579.54 ± 150.06) compared to controls (579.54 ± 135.90; p< 0.02). When the infertile group was stratified by diagnosis, the TAC levels were comparable between the endometriosis (420.62 ± 117.42) and idiopathic infertility groups (423.17 ± 135.90). Despite the small sample size, the above difference showed a trend towards reaching significance (p < 0.065). BDR was comparable in the infertile group and the control (p< 0. 14).

**Conclusions**: Peritoneal fluid is not embryotoxic in women with mild and minimal endometriosis and idiopathic infertility. Low intrinsic levels of TAC or increased TAC consumption to combat oxidative stress may prevail in these women. Further research may clarify the role of oxidative stress in the pathogenesis of infertility.

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