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Objectives: The peritoneal fluid (PF) environment in patients with endometriosis may contribute to infertility. Reactive oxygen species (ROS) have been shown to compromise sperm function. This study sought to determine whether ROS is present in PF and whether PF in women with endometriosis affects sperm function.

Methods: Peritoneal fluid was aspirated from women with endometriosis (n = 15) who underwent laparoscopy for infertility. Women undergoing tubal ligation served as controls (n = 14). Production of ROS was measured in the cellular and cell-free fractions by the chemiluminescence method. Sperm motility, motion characteristics and acrosome reaction were assessed following incubation with peritoneal fluid.

Results: Levels of ROS in the endometriosis group were higher in the cellular fraction [median and interquartile values, 115.8 (25.4, 194.2) $\times 10^4$ counted photons per sec (cpm)], compared to the cell-free fraction [1.3 (0, 5.9) $\times 10^4$ cpm; (P < 0.001)]. Similar results were seen in the tubal ligation group (P < 0.001). However, no differences were found between the cellular or the cell-free fractions between the two groups of patients. PMN cells were not present in the peritoneal fluid of either groups. Sperm motion characteristics such as curvilinear velocity (r = 0.54; P < 0.85), straight line velocity (r = 0.55; P < 0.12), average path velocity (r = 0.54; P < 0.19), and amplitude of lateral head displacement (r = 0.52; P < 0.15) showed no differences between the two groups. Acrosome reaction also did not differ significantly between the two groups after 3, 5, or 24 h of incubation with peritoneal fluid.

Conclusions: The levels of ROS in the PF of women with endometriosis are no different from fertile controls. The peritoneal fluid from neither group had an adverse effect on sperm motility parameters or the acrosome reaction.