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Correlation of oxidative stress biomarkers in human follicular fluid with outcome in assisted reproduction cycles

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To investigate whether oxidative stress markers in human follicular fluid (FF) surrounding oocytes are related to embryo development, we examined the relationship between oxidative stress markers and the in vitro fertilization (IVF) outcomes. Seventy-eight infertile women were included in the study. FF was obtained from mature follicles at the time of oocyte retrieval. The total antioxidant capacity (TAC), glutathione, vitamin C, and 8-2'-deoxyguanosine (8-OHdG) concentrations were measured. There was a significant negative correlation between 8-OHdG and vitamin C levels ($r = -0.295$, $p < 0.01$). Total GSH and vitamin C levels were found to be lower in the case of low fertility. In addition, 8-OHdG levels were found to be higher in the case of low fertility and low development competence. Total GSH activity was found to be lower in endometriosis patients, as opposed to male factors. The results of the present study suggest that measuring individual activities of antioxidants in FF will become an important marker for fertilizing in ART. We also found that FF may be an optimal source of non-invasive biochemical markers for the diagnosis of the fertilization failure in IVF. The study also demonstrated that endometriosis patients had lower antioxidant levels compared with patients with male factor infertility. ROS appear to have negative roles in oxidative stress in relation to female reproduction.