Prostatitis (NIH category III) is associated with seminal oxidative stress

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Objectives: An association between prostatitis and male subfertility has been suspected, yet poorly understood. Although the clinical significance of leukocytic infiltration in semen is controversial, there is substantial evidence that granulocytes are the major source of reactive oxygen species (ROS), which has been proven to be deleterious to male fertility. The initial steps in proving an association between prostatitis and male infertility requires better understanding of the relationship between clinical prostatitis and oxidative stress. Therefore, we compared ROS, total antioxidant capacity (TAC) levels, and a novel index of oxidative stress (ROS-TAC score) in patients with chronic prostatitis (CP), and normal healthy men.

Design: Prospective study.

Materials and Methods: Semen specimens from 36 subfertile men with CP (NIH category IIIa), 8 men with prostatodynia (NIH category IIIb) and 19 donors attending our urologic clinic were examined according to the World Health Organization (WHO) criteria. Leukocytospermia levels were measured by the Endtz test (myeloperoxidase assay). White blood cell levels >1X10^6/mL white blood cells were considered positive for leukocytospermia. ROS production was measured by the chemiluminescence assay using luminol as a probe. Total antioxidant capacity (TAC) was measured in the seminal plasma by an enhanced chemiluminescence reaction and expressed as molar Trolox equivalents. ROS-TAC score was formulated to predict oxidative stress in these men. Receiver operating characteristics (ROC) curves were used to examine the diagnostic ability of the ROS, TAC and ROS-TAC score to predict the diagnosis of chronic prostatitis.

Results: There were no differences in sperm characteristics (concentration, percentage motility, and morphology) between patients with or without leukocytospermia when compared to the control group. ROS levels were significantly higher in patients with leukocytospermia (3.2 ± 0.6) compared to patients without leukocytospermia (1.8 ± 0.2) (p = 0.04) and the controls (1.3 ± 0.3) (p = 0.01). TAC levels were significantly depressed in patients irrespective of the leukocytospermia status (859.69 ± 193.0 and 914.9 ± 65.2), compared to the control group (1653.98 ± 93.6, p = 0.001). ROS-TAC score differed significantly among donors (50.0 ± 4.1), patients with leukocytospermia (8.2 ± 9.2), and patients without leukocytospermia (34.2 ± 2.9) (P < 0.001).

Conclusions: Our results demonstrate that men with chronic prostatitis or prostatodynia have seminal oxidative stress. Depressed levels of TAC were seen in these men irrespective of their leukocytospermia status. These observations may help shed light on the long standing controversy surrounding prostatitis and infertility.

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