

Abstract

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Relationship between male reproductive hormones, sperm DNA damage and markers of oxidative stress in infertility.

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OBJECTIVE: This study investigated the relationship between male reproductive hormones and sperm DNA damage and markers of oxidative stress in men undergoing infertility evaluation for male factor (n = 66) and non-male factor (n = 63) infertility.

METHODS: Semen samples were analysed for DNA fragmentation index (DFI). Serum samples were analysed for FSH, inhibin B, anti-Müllerian hormone (AMH), testosterone and total antioxidant capacity (TAC).

RESULTS: Serum inhibin B was significantly lower in the male factor group compared with the non-male factor group. Inhibin B showed a positive correlation with sperm concentration and motility, and serum AMH showed a positive correlation with sperm concentration and semen volume. DFI was 3-fold higher in the male factor group and showed a negative correlation with sperm motility. Blood plasma TAC was negatively related to sperm concentration. The results confirm that AMH and inhibin B are markers of Sertoli cell function. Sperm DNA damage is moderately increased in male factor infertility, and is negatively associated with sperm motility.

CONCLUSION: A negative association between antioxidant activity and sperm concentration suggests that even minimal oxidative stress may influence sperm concentration. However, there was no significant relationship between hormone concentrations, sperm DNA damage and total antioxidant capacity, suggesting other mechanisms for sperm dysfunction.

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