

Coenzyme Q10 attenuates testicular oxidative stress and ameliorates sperm parameters induced by testicular ischemia/reperfusion in rats

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Background:

Testicular Torsion (TT) is an emergency urological condition, which is only treatable by testicular Detorsion (TD) surgery. The current study aimed to investigate Coenzyme Q10 potential inhibitory effects on TT/TD-induced injuries by examining the testicular antioxidant status and sperm functional parameters.

Method and Materials:

Thirty-two male mature *Wistar* rats were randomly divided into sham (N=8 rats) and experimental groups (N=24 rats). Twenty-four rats were submitted to TT for two hours. Following TT, eight animals' testis and epididymis were removed (TT group), and TD was performed on remaining rats. Eight animals received normal saline (TD/NS group), and eight rats received Coenzyme Q10 (10 mg/kg i.p; TD/CoQ10 group) 30 minutes before TD surgery. Testicular and epididymis samples were aseptically dissected two hours post TD surgery for biochemical (malondialdehyde, Total antioxidant capacity (TAC), Catalase, Glutathione peroxidase (GPx)), and sperm analysis (Motility, concentration, Viability, Mitochondrial activity, and DNA damage), respectively.

Results:

The TAC, Catalase, and GPx levels were decreased in TT, TD/NS groups compared to the sham group, while MDA level was increased. Sperm motility, concentration, viability, mitochondrial activity, and DNA integrity were remarkably decreased in TT, and TD/NS groups compared to sham-operated group. However, CoQ10 treatment could significantly increase TAC, Catalase, GPx, sperm motility, concentration, viability, mitochondrial activity, and DNA integrity compared to TT, TD/NS groups.

Conclusion:

Based on the current study findings, CoQ10 (10mg/kg) injection up-regulated antioxidant enzymes activity and sperm parameters, demonstrating that CoQ10 injection 30 minutes before TD may positively improve the surgery prognosis.

Keywords: Coenzyme Q10, Torsion, Detorsion, Sperm, Rat