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Poster Presentations

P-90
Association of miR-122a expression with high level of oxidative stress in grade III varicocele

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Background: Varicocele is one of the main leading causes of male fertility, and present in ~10% of adult men. In some severe cases, it can lead to dysfunctional spermatogenesis due to unbalanced increase of reactive oxygen species (ROS) in testis. However, current evidence indicates that ROS-induced oxidative stress is the central mediator contributing to infertility in men with varicocele. Although the harmful effects of ROS on sperm DNA, proteins, and lipids are well documented, its impact on the expression of miRNAs in spermatozoa has not been fully understood. Recent evidences have revealed that specific miRNA contributes to the modulation of oxidative stress and their irregular results due to the impairment in spermatogenesis of infertile males.

Objective: We evaluated the expression pattern or miR-122a as a key factor in germ cell development of spermatozoa of men in three different groups; grade III varicocele patients with normal (VN) and abnormal (VA) spermogram and fertile control (FC) men with proven fertility.

Materials and Methods: In this study, the semen samples were obtained from patients with normal (VN, n = 15), abnormal (VA, n = 15) spermogram and fertile controls (FC, n = 15) in each group. Semen was separated by a density-gradient centrifugation (DGC) to gathered spermatozoa for subsequent RNA extraction. The real-time PCR was performed to analyze the expression of the miR-122a throughout three groups.

Results: Our results showed that the expression levels of miR-122a ($p < 0.001$) were significantly decreased in patients with grade III varicocele with normal (VN) and abnormal (VA) spermogram in comparison with the fertile control (FC) group. A significant reduction in miR-122a expression was also detected in patients with grade III varicocele with normal (VN) compared with patients with grade III varicocele with abnormal (VA) spermogram ($p < 0.046$). Moreover, increased levels of oxidative stress were determined in semen samples of varicocele patients compared with the fertile control ($p < 0.0001$).

Conclusion: In conclusion, our results demonstrated a significant decrease in the level of oxidative stress-related miRNAs in severe varicocele patients, particularly those with defective spermatogenesis. We hypothesized that miRNAs play crucial roles in response to oxidative stress that is induced in spermatozoa of men with varicocele.

Key words: *Grade III Varicocele, Male infertility, Oxidative stress, miRNAs, Reactive oxygen species.*

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