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Poster Presentations

P-56
Effects of bacteria on male fertility: Spermatogenesis and sperm function

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Background: Interestingly, bacteria can induce different damages on sperm cells such as DNA fragmentation, cell membrane peroxidation, and acrosome impairment. Such negative effects can be mediated by bacteria-secreted toxins and metabolites or by direct attachment of bacteria on the sperm cells and subsequent activation of signaling pathways related to oxidative stress, apoptosis, and inflammation.

Objective: In this study, we reviewed the impact of male urogenital bacteria on spermatogenesis and sperm functions as well as the underlying mechanisms by which the bacteria can damage sperm.

Materials and Methods: The present review involved all published research articles that have investigated the effect of bacteria on spermatogenesis and sperm function. Combinations of the following terms were searched in Google Scholar, PubMed, and Science Direct databases with no limitation on the date of publication: "sperm", "spermatozoa" "spermatogenesis", "bacteria", and "bacterium".

Results: Interestingly, bacterial contamination of semen, which ordinarily originates from the urinary tract or by the partner through sexual intercourse, can induce DNA fragmentation, cell membrane peroxidation, acrosome impairment, vacuolization, and mitochondrial damage in sperm cells. Bacteria can exert these effects by toxins or by direct attachment to the sperm cells and subsequent activation of signaling pathways related to oxidative stress, apoptosis, and inflammation. These bacteria-induced changes in the sperm can impair semen parameters including concentration, motility, morphology, viability, and fertilization capacity, and subsequently cause infertility.

Conclusion: Given the significant destructive effect of some bacteria on sperm cells, the type of bacterial contamination in the patient's genital tract should be diagnosed and its potential negative effects on male fertility, and the underlying mechanisms should be taken into account in the treatment of bacteria-induced subfertile men. Furthermore, future studies are recommended to investigate possible therapeutic strategies to inhibit bacteria-induced sperm damage based on the type of bacterium and its potential damages on sperm cells.

Key words: *Bacteria, Sperm, Fertility, DNA fragmentation.*

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