



**Azerbaijan
Medical University**



**AFGEN
Genetik
DİAĞNOZ MƏRKƏZİ**

The First International Scientific Practical Online Conference Human Genetics and Genetic Diseases: Problems and Development Perspectives

Date: 10.00 A.M., 30 - 31. 05. 2020

Venue: Azerbaijan Medical University, Baku, Azerbaijan.

Address: 163, Samad Vurgun Street, Building 5.



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Invited organizations:

Tbilisi State Medical University

School of Medicine, New Vision University

Department of Biophysics, Iv. Beritashvili Center of Experimental Biomedicine

Georgian Association for Management and Development of Laboratory Medicine MDLM

Institute of Genetic Resources of Azerbaijan National Academy of Sciences

Institute of Microbiology, Academy of Sciences of the Republic of Uzbekistan (Uzbekistan)

West Kazakhstan Marat Ospanov Medical University (Kazakhstan, Aktobe)

Semey Medical University. (Kazakhstan, Semey)

Influence of Male Reproductive System Infections on Sperm DNA Fragmentation

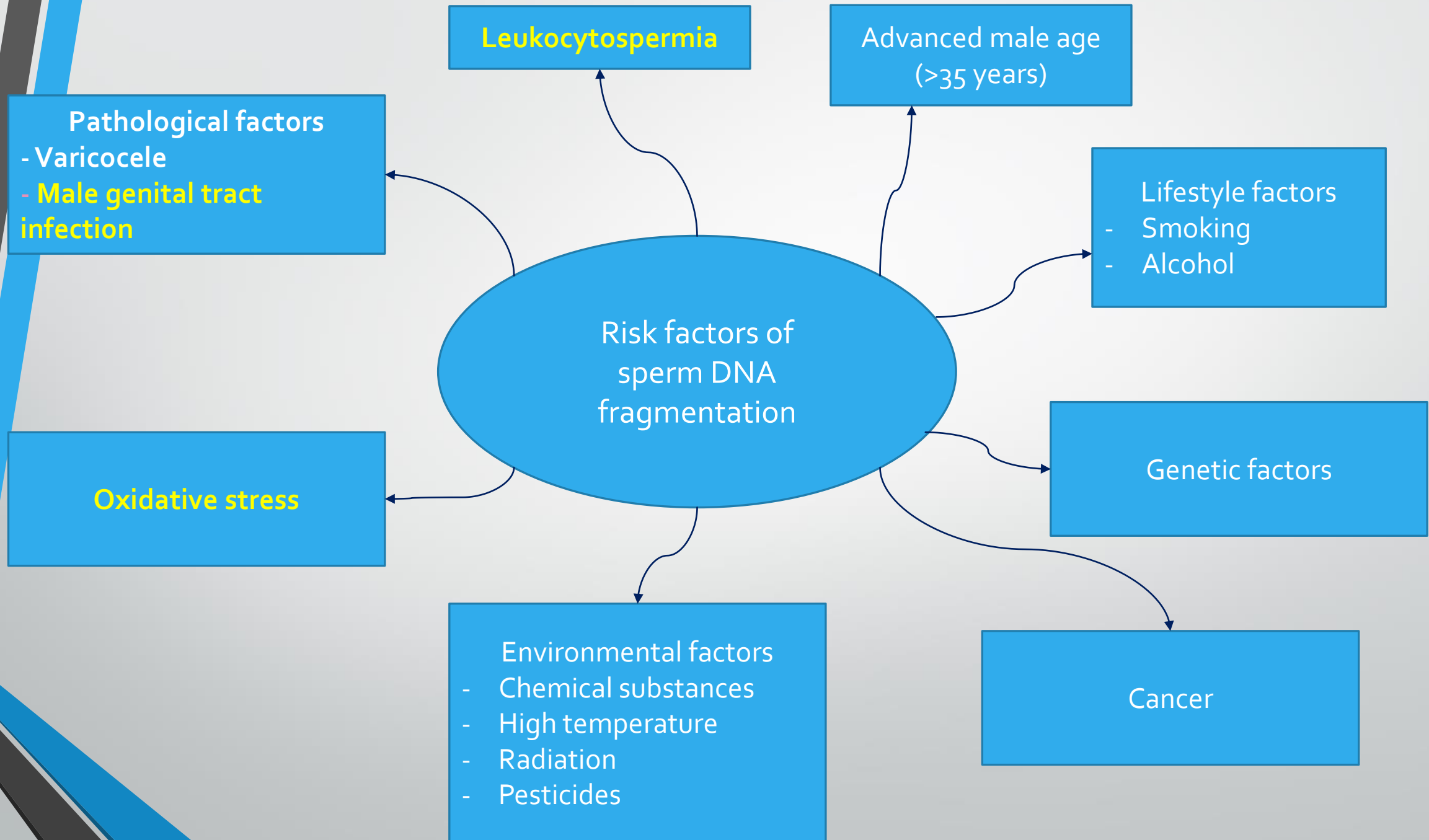
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Tbilisi State Medical University, TSMU The First University Clinic

Microbiology department

Associate professor

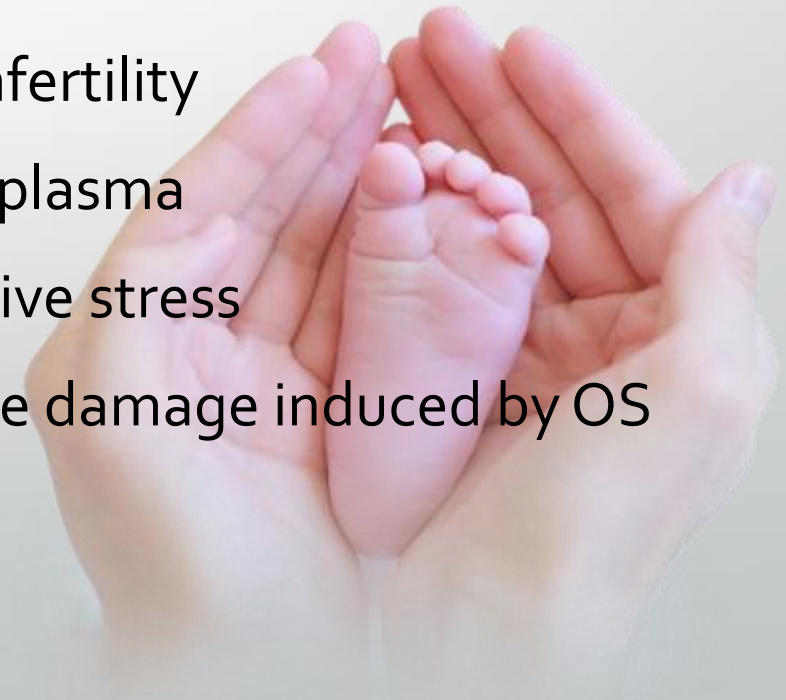






World Health Organization

- 1/20 men has some kind of infertility problem
- 15% of infertile men have normal semen analysis but they have increased DNA fragmentation level (DFL)
- Oxidative stress is one of the major causes of male infertility
- 30-40% have elevated levels of ROS in their seminal plasma
- Human spermatozoon is highly susceptible to oxidative stress
- Unfortunately, spermatozoa are unable to restore the damage induced by OS
 - They lack cytoplasmic enzyme repair system



Endogenous sources and mechanism of ROS

- PNL (50-60%)
- Macrophages (20-30%)
- Infection and inflammation
 - Can discharge <100 times more ROS than normal
- Increased proinflammatory cytokenes:
 - interleukin – 8
 - Interleukin – 6
 - TNF
 - They increase lipid peroxidation of the sperm cell membrane, DNA fragmentation, axonemal damage, denaturation of enzymes, over-generation of superoxides in mitochondria.
 - Eventually results in **ABNORMAL SPERMATOGENESIS**
- Decrease in antioxidant superoxide dismutase (SOD)
 - Result – respiratory burst, production of high level ROS
 - Outcome of oxidative stress

Purpose of our study

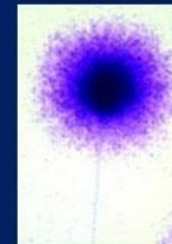
- We retrospectively studied 52 patients who visited TSMU the First University Clinic, Urology department.
- We internalized difference between parameters before and after treatment
- Find:
 - correlation between male genital tract infection
 - Oxidative stress levels and
 - Sperm DNA damage

halotech®

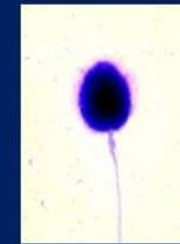
Following analyses were conducted in TSMU The First University Clinic and Georgian-Austrian Medical Center



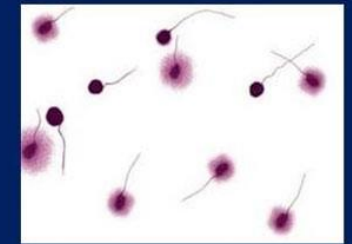
- Sperm bacteriological analyses
 - EUCAST2019
 - API system
 - Oxidative stress measurement test
 - HT-OS20 Halotech
 - DNA fragmentation test
 - HT-HS10 Halosperm in-vitro diagnostic kit
- Fresh samples were taken for all the tests



Normal DNA



Abnormal DNA



4 out of 11 sperm are abnormal

Sperm Bacteriological Test Results

- Enterococcus faecalis-25
- Spathylococcus aureus-14
- Escherichia coli-10
- Enterobacter cloacae-3

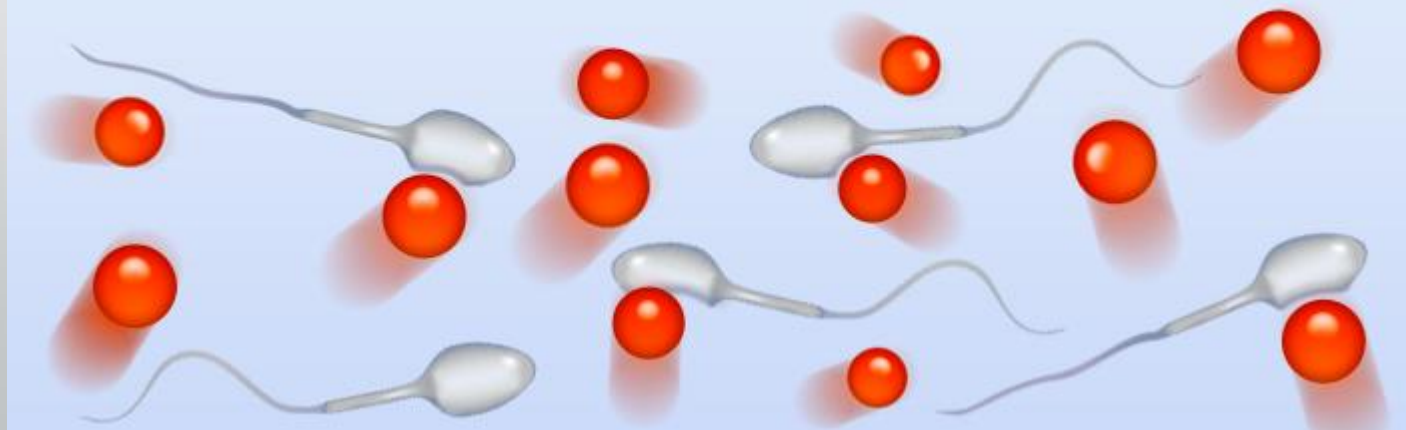
Results

Patients Number	Bacteriology Results CFU/ ml		Oxidative stress		DNA Fragmentation %	
	Before treatment	After treatment	Before treatment	After treatment	Before treatment	After treatme nt
32	10^6	No growth	L3	L2	>30	<15
14	10^5	No growth	L2	0	15-30	<15
6	10^8	No growth	L4	L2	>50	15-30

Conclusion

- Combination of antioxidant and antibiotic therapy appears to be important in providing a remedy for infection-induced high DNA fragmentation levels.
- There is a significant association between sperm DNA fragmentation, oxidative stress and infection

Oxidative Stress occurs when your body has more ROS than it can cope with, radically affecting sperm health



Thank
You!





Thank you for your attention



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