TRANSCRIPTIONAL PROFILES OF MITOCHONDRIAL DYNAMICS MARKERS IN HUMAN SPERMATOZOA ARE ASSOCIATED WITH DIFFERENT TYPES OF SPERMIOMGRAPHS

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INTRODUCTION:
Infertility has become one of the greatest health issues today, affecting millions of people worldwide, with significant contribution of male factor in many reported cases. Bearing in mind the increasing number of unexplained cases of infertile men in the peak of reproductive period and the lack of an accurate test for assessment of spermatozoa functionality, World Health Organization urges for the development of a new prognostic/diagnostic tool for detection of male infertility. Since mitochondria play important role in spermatozoa, regulating their homeostasis and functionality, it is reasonable to presume that they could be involved in these types of abnormalities and markers of their dynamics could be used as "mitochondrial-sperm signature", to test the spermatozoa functionality. Regardless of that, little is known about mitochondrial dynamics markers in human spermatozoa. Therefore, the main objective of this research was to assess transcriptional profile of mitochondrial dynamics markers in the spermatozoa of men diagnosed with some of the most common types of sperm disorders.

METHODS
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RESULTS
Transcript levels of some of the main mitochondrial dynamics markers showed significant changes in spermatozoa of patients diagnosed with teratozoospermia.

(A) Main mitochondrial biogenesis markers

(B) Main mitochondrial fusion markers

(C) Main mitochondrial fission markers

(D) Main mitochondrial autophagy markers

No significant difference in testosterone level in seminal plasma was noticed between groups.

CONCLUSION
Teratozoospermia

Based on the obtained results it is evident that the markers of mitochondrial dynamics in human spermatozoa exerted different patterns depending on the type of spermiogram. However, testosterone level in seminal plasma remains unchanged.

Although trends of stimulation in transcription were observed for some markers in asthenoteratozoospermic and oligoasthenoteratozoospermic group, due to a small group sizes, statistical tests could not be applied, therefore, the most remarkable changes were observed for teratozoospermic group.

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