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P82. POSSIBLE ROLE OF MITOCHONDRIAL MEMBRANE POTENTIAL (??M) AND ROS IN LONG-TERM HUMAN SPERM MOTILITY

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CONTEXT: Basic diagnostic methods for semen analysis may result insufficient in evaluating the male fertility potential leading to the diagnosis of idiopathic infertility representing 15% of infertility causes. In this regard, attention has been focused on the evaluation of mitochondrial functionality and oxidative stress as parameters which can affect the ability to maintain sperm motility in the long term. OBJECTIVE: The aim of the study was to verify whether the maintenance of motility during time is correlated with mitochondrial functionality, in terms of membrane potential (??m) and generation of mitochondrial ROS. METHODS: Thirty-one seminal samples with sperm motility and concentration >5° percentile (WHO, 2010) were subjected to swim-up for motile sperm selection. Sperm motility was evaluated at 0, 6 and 18 h through computer aided semen analysis (CASA) to quantify the percentage of motility and kinetic qualitative parameters. The fluorescent lipophilic cationic dye JC-1 was used to evaluate trans-membrane potential of sperm mitochondria. In each sample, the percentage of sperm with high ??m was determined by flow cytometry at 0 and 6 h. Mitochondrial generation of ROS was evaluated by staining sperm with MitoSOX red at 0 and 6 h, followed by flow cytometry. Statistical analysis was carried by R-Statistical analysis was performed using the R statistical software (version 3.0.3) and statistical significance was accepted when $p<0.05$. RESULTS: CASA analysis revealed a significant reduction of sperm motility and kinetic qualitative parameters during time. Sperm motility at basal evaluation was positively correlated with the motility at 6 h, but no correlation was evidenced between basal and 18 h sperm motility. By investigating the possible involvement of mitochondria, we found that ??m at 0 h was negatively correlated with the loss of motility between 0 and 18 h. Although increased mitochondrial ROS production was assessed at 6 h when compared with 0 h, ROS levels were not correlated with either motility or ??m variations. CONCLUSIONS: Present results support the hypothesis that baseline sperm motility is not predictive of the long term fertilizing potential so encouraging further research on biological and diagnostic role of this parameter. Moreover since motility loss was correlated with mitochondrial ??m, but not with mitochondrial ROS, we propose that ??m may represent an interesting candidate as diagnostic test of sperm functionality.

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