

Sperm Dynein ATPase Activity and AAA1-2 Expression: A Regulation in Asthenozoospermia

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ABSTRACT

Asthenozoospermia is a common cause of male infertility. It is characterized by reduced sperm motility and has numerous cellular mechanisms. Unfortunately, there are restricted data on dynein ATPase and ATPase associated with various cellular activities (AAA)1-2. This study explored the role of dynein ATPase activity and quantification of AAA1-2 dynein. Fifteen asthenozoospermia samples were used in this study. Semen analysis was conducted based on WHO 2010, while dynein ATPase was defined by the released inorganic phosphate and AAA was determined by ELISA. This study showed that the dynein ATPase activity in asthenozoospermia was significantly lower than in the normozoospermia group (3.7 ± 0.3 vs. 7.5 ± 0.4 $\mu\text{mol Pi/mg protein/h}$, respectively, $p < 0.05$). Furthermore, the quantification of AAA1 and AAA2 was showed unsignificantly lower in asthenozoospermia compared to normozoospermia group (1.7 ± 0.1 vs. 4.5 ± 0.2 ; 3.8 ± 0.4 vs. 5.6 ± 0.5 ng/ml, respectively, $p > 0.05$). The structure and function of damaged sperm dynein may alter dynein ATPase activity and levels of AAA1 and AAA2 in asthenozoospermia.

Keywords: Dynein ATPase, AAA1, AAA2, Asthenozoospermia, Male infertility

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