

Mini Review

A Mini Review on the Relationship between Sperm Motility and Pregnancy

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Abstract

The review was concerned with the importance of sperm motility as one of the important factors in fertilization. The seminal plasma quality plays the main factor in sperm movement. There are many factors that affect the mobility of sperms including oxidative stress, aging, cigarette smoking, environmental factors, hormonal defects, and alcohol consumption, however, using supplementations can be useful to decrease the reactive oxygen species.

SPERM MOTILITY AND SEMINAL PLASMA

Sperm that moves forward at a rate of at least 25 micrometers per second is considered to have healthy sperm motility. Poor sperm mobility in men is referred to as asthenospermia. There are various problems with sperm motility, such as increasing motility that is slow or sluggish. Anything moving at less than 5 micrometers per second is considered non-progressive motility.

The sperm motility and viability are dependent on sperm and seminal plasma (SP) or their interaction. Turunen et al [1] found that seminal plasma is a potential source of biomarkers for diagnostics and therapeutic interventions for male-derived infertility. Also, they reported that dipeptidyl peptidase-4 (DPP4), neutral endopeptidase (NEP), and aminopeptidase N (APN) levels in SP were positively associated with sperm swimming velocity and hyperactivation.

Seminal plasma (SP), the acellular portion of the semen, is a complex combination of substances released from the accessory sexual glands and the epididymis. At first, it was believed that SP simply served as a pathway for spermatozoa to enter the female reproductive system [1]. However, more recent research has shown that SP serves multiple purposes in the fertilization process [2]. As a result, SP is now understood to play a key role in a variety of characteristics of male reproduction, including sperm phenotype and functionality as well as offspring performance [3].

OXIDATIVE STRESS AND SUPPLEMENTING

It is widely established that oxidative stress (OS) and low semen quality are related to the pathogenesis of male infertility [4]. Sperm cells' DNA, proteins, and lipids can be oxidized by reactive oxygen species (ROS) in high concentrations, which

alters the sperm cells' vitality, motility, and shape [5]. The antioxidant alpha-lipoic acid (ALA) suppresses ROS damage and enhances spermatozoa motility, morphology, and count characteristics in semen. Low sperm quality may be attributed to inadequate zinc intake [6]. The concentration and shape of the sperm are improved by supplementing it with zinc and folate. The concentration, total, and progressive motility of sperm are all increased by CoQ10 supplementation. Supplementing with selenium (Se) raises ejection volume and enhances overall semen quality. Only vitamin B12, which raises sperm count and motility and lowers sperm DNA damage, has a beneficial influence on the quality of semen [5].

SPERMATOZOON AND FERTILIZATION

A motile cell called a spermatozoon has the unique capacity to move through a woman's reproductive system and fertilize an oocyte. Spermatozoa should have increased motility to enter and penetrate the oocyte. Therefore, both naturally occurring and aided conception depend on motility. Increased risk of infertility is linked to the global trend of the gradual reduction in the number and motility of healthy spermatozoa in the ejaculate. Therefore, methods for preserving or improving human sperm motility have been a key focus of research. The physiology of sperm, molecular pathways controlling sperm motility, risk factors influencing sperm motility, and the function of sperm motility in fertility outcomes are very important. Moreover, several pharmaceutical substances and biomolecules that can improve sperm.

TREATMENT SPERM MOBILITY

Making the following lifestyle modifications may help

enhance sperm motility; exercise, keep a healthy weight, limit the use of mobile devices, decrease alcohol, and stop smoking.

CONCLUSION

In conclusion, dietary antioxidant supplements may help men who produce low-quality sperm by reducing OS-induced sperm damage and boosting hormone synthesis, spermatozoa concentration, motility, and morphology. Empirical treatments with hormones, antioxidant supplements, and natural products have not consistently improved sperm motility in ejaculated spermatozoa. Further thorough research in this area may be helpful to medically assisted or artificial insemination methods, given the advantage of ex vivo modification of motility with pharmacological agents, notably phosphodiesterase inhibitors. Using high-throughput screening techniques, new sperm motility-enhancing substances can be discovered more quickly. Further proof that these motility boosters have no negative impact on the developing embryo is crucial.

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