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Diagnostic resources and Biotechnology in the transport of gametes into the female genital tract

Murcia Lora José María[1], Fonseca Santiago Tatiana[2], Simoni Jennifer[3] and Diglio Simoni[4]

[1]*Specialist in Gynecology and Obstetrics, University of Navarra, Spain,*
[2] *NaProTechnology. Portugal.*
[3] *Physician Assistant-Certified, Le Moyne College, USA.*
[4] *Computer and Information Science, Syracuse University New York, USA*

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Comprehensive assessment between cervical mucus and spermatic swimming is one of the current challenges in the approach to sterility. The assessment of the gamete transport factor in the female genital tract has focused in recent years on anatomical tests that guarantee tubal patency. However, there are factors that are being the focus of attention in the comprehensive assessment of the role of gamete transport to achieve adequate fertilization. The physiological variability of the different concentrations of estrogen and progesterone throughout the menstrual cycle, determines in an orderly way the outcome of a chain of events that occur, one after the other, in the swimming of male and female gametes throughout the female genital treatment. Current advances allow the integration of diagnostic resources to guarantee and recover the integrity of the spermatic swim at all levels of the genital apparatus, from the cervical neck to the uterine tubes.

DISCUSSION

Currently the causes of infertility of male origin amount to 20%, and together among the mixed causes of infertility the figure is usually around 15%. Among the causes of sterility of male origin, due to low sperm counts (oligozoospermia) and / or low sperm motility (asthenozoospermia), this figure comes to represent around 50% of infertility cases. On the other hand, subfertility is another population group that has an incidence between 10 and 30% of the general population, among which 10% of couples who want to conceive have underlying tubal pathology. Subfertility occurs with a frequency between 10- 30% of the general population. Within this percentage of patients with subfertility, 10% of couples who wish to conceive may have underlying tubal pathology. In this group of patients, the evaluation of tubal patency continues to be the main study that is considered in the approach to assessing the transport factor of gametes in the female reproductive tract. Among the technical resources currently available with a positive transport factor for male gametes, the fact of supplanting the natural tubular channel of sperm by artificial insemination (AI) has been relevant. However, AI fails to resolve the vast majority of cases with preserved ovulatory functional capacity and preserved tubal patency. Selection of sperm using artificial techniques, isolating more mobile and presumably healthier sperm, does not solve all cases. Gamete manipulation by IVF and ICSI are not entirely successful despite scientific advances in this field. The basis of this study has been checking the principal function of the gametes to reach the female gamete. The objective of this analysis is to assess the different microenvironments of the female reproductive tract that can affect gamete transport. The cost-benefit ratio of the different tests investigating tubal patency in patients with subfertility pose new challenges that may arise from current advances in the physiology of the cervical transport factor. The structures of the female reproductive system will play a fundamental role in guaranteeing the survival, training, acrosome reaction (RA) and migration of sperm to eventually fuse with the oocyte. Tre principal functions are needed to the RA.

A-CERVICAL DISCHARGE AND CHANNEL FORMATION FOR SPERMATIC SWIMMING

The mucin filaments tend to align longitudinally within the cervical canal, creating aqueous channels between the filaments. It seems that the effect of the parallel fibers of the glycoprotein bands can exert a driving effect on the gametes themselves. Natural swimming channels are formed from the interaction between the non-ciliated cylindrical epithelial cells which secrete mucin granules, and the hair cells that drive cervical mucus from the crypt of origin to the external cervical orifice. This process is considered to be dependent on the rheological forces associated with mucus flow from the cervical crypts, which tend to align the mucin filaments longitudinally within the cervical canal.

B-CERVICAL DISCHARGE IN SPERM TRAINING AND SELECTION

These changes in vivo at the level of sperm capacitation, in a natural environment, without the need to place artificial means, allow a suitable environment so that the necessary changes in the composition of the sperm membrane can take place, both at the level of transport of membrane fusion ions. Introducing seminal fluid into the endocervix by insemination has not been found to resolve all cases of sterility.

Thus, it has been estimated that the male cells with greater mobility are those that in principle have a greater probability of fertilizing. Sperm training allows the sperm to be available to be able to have a back and forth movement sufficient to move up the canal and fertilize the egg. In cases in which adequate sperm training is not achieved, the absence of fertilization is greater. Although sperm capacitation has been induced in vitro, it is not clear whether the changes caused by in vitro manipulation are the same as those occurring in vivo. In vitro training leads to higher cost and failures that make the cost-benefit ratio more expensive at the health level. Sperm capacitation and acrosomal reaction are essential precursors to normal fertilization. Evidence in the absence of these events in non-incubated, or untrained, sperm determines the difficulty of effectively fertilizing an egg in a natural environment. Therefore, it is easy to understand that synchrony in sperm capacitation within the female reproductive tract can have some advantages, compared to an artificial insemination process.

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C-CERVICAL FACTOR AND SEX STEROIDS IN THE EVALUATION OF SPERMATIC SWIMMING

In the follicular fluid there are various molecules such as progesterone, estrogen, testosterone and others, which act directly on the physiology of the sperm. In this scenario, ovulation would generate the release of an oocyte complex accompanied by a follicular fluid rich in testosterone, which at the time of the encounter with the sperm could delay the RA, thus affecting the fertilization of the oocyte

CONCLUSION

The integration of sperm swimming in the fertile window approach allows the development of new technologies that integrate the joint assessment of cervical factor and sperm swimming. It is necessary to consider more advances in biotechnological devices that can contribute to giving information to the study on the total interaction of the transport factor and the capacity for sperm rise.

neurogenesis, apoptosis, cells distribution within specific regions or nuclei, neuronal and synaptic density and size, maturation and migration, neurite growth and synaptogenesis, angiogenesis, plasticity and connectivity, axonal sprouting and remyelination, expression of neurotrophic factors.