Editorial Note on Infertility caused by the male-factor

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Editorial Note

Couple infertility is a major public health issue that poses a science, medical, and financial challenge. The psychological effect of the whole process, however, should not be overlooked. According to studies, 15% of couples have difficulty reproducing, with 2/3 of the cases involving an exclusive or related male cause, and the prevalence of male sterility is estimated to be 10%. Occlusion of the genital tract, erection or ejaculation issues, endocrine problems (hypogonadotropic hypogonadism), abnormalities in spermatogenesis, and impaired function of mature spermatozoa are all possible causes of male infertility. The prognosis has been thrown off by recent developments in assisted reproductive technology, such as intracytoplasmic sperm injection (ICSI). Men who were once thought to be forever sterile can now have children, increasing the possibility of genetic defects causing their infertility being passed on to future generations.

Molecular biology has enabled researchers to uncover previously unknown etiologies on a massive scale. It gave us new insights, but it also exposed our flaws. Without calling into doubt the explanatory value of any well-known causes (varicocele, genitourinary infection, anti-spermatozoid antibodies, etc.), This significant shift in thinking about male infertility has resulted in the addition of a new dimension. However, if researchers play an important role, what about clinicians who treat gametes and provide hope to couples without having full influence over the outcomes? Medically assisted reproduction, especially ICSI, has made a significant difference in the treatment of male infertility. Vertical genetic defects, such as the Y chromosome microdeletion, may be passed on from father to son. As a result, the couple needs comprehensive information (genetic counselling) about the possible risks so that they can understand and take responsibility for the I.C.S.I. (informed consent). Infertile men will now pass on a potential genetic abnormality to their offspring thanks to medical assistance procreation (AMP) techniques. Natural selection, which previously prevented the transmission of infertility-causing mutations, is now being bypassed by technology, exposing the possibility of an increase in the genetic causes of infertility in the future. Genetic therapy is now a required phase in the evaluation of infertility, and the detection of genetic factors is becoming a critical step in the management of infertile couples.

Technology is now bypassing natural selection, which historically prevented the transmission of infertility-causing mutations, exposing the risk of a rise in genetic causes of infertility in the future. The identification of genetic factors is becoming a crucial step in the management of infertile couples, and genetic therapy is now a necessary process in the assessment of infertility. Furthermore, the presence of chromosomal defects and familial cases indicates that some cases of sterility are caused by a genetic disorder. Among these, chromosomal abnormalities are the most frequent and require the study of the karyotype of patients with azoospermia or non-obstructive oligo-zoospermia. Finer genetic abnormalities have been detected thanks to advances in molecular biology: micro-deletions of the Y chromosome have identified a portion of the genes on the long arm of this chromosome that play a role in spermatogenesis. The use of animal models has also contributed to the discovery of other genes that are linked to sterility in humans.

New pan genomic genotyping techniques have recently contributed to the discovery of new genes involved in complex male infertility phenotypes. The genetic cause of two types of extreme teratozoospermia (morphological defects of the spermatozoon) has only recently been discovered: patients with spermatozoa are either macrorephalic or have a round head without an acrosome (globozoospermi). The study of the genetics of male infertility is currently being disrupted by polymorphism research. As a result, certain polymorphisms or variant genes involved in the proper course of spermatogenesis are thought to be potential risk factors that could lead to the severity of spermatogenic defects. As a result, a number of genetic variants have been linked to male infertility. Nonetheless, these associations exist.

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