Male infertility

Throughout the years, the percentage of infertility has risen dramatically; today it reaches the 15-20%. A long time ago we used to believe that the failure of conception and childlessness was woman's insufficiency and responsibility. Nowadays, we have the knowledge, from statistical records, that men are at least 40% co-responsible for couples' infertility. However, from this majority of men, only 5-10% are trying to conceive.

At this point, it is important to mention that in some cases both men and women may be infertile or sub-fertile and the one of the two may be the cause of infertility.

According to Word Health Organization (WHO) the ratings of a physical semen analysis measured by the number of sperm per milliliter of ejaculate after two further follow –ups are:

- Volume of ejaculation : <1.5mL
- PH range :7.2-7.8
- Concentration of spermatozoon: >10 -15 million sperm/mL
- MOT (motility):>40% (good forward movement, Grade a+b+c)
- Total Motile spermatozoa(TMS 15 million sperm/mL
- Normal morphology:>4%
- Fructose levels : 13µmol per sample
- Liquefaction :20-60min until the sample change from thick gel into liquid

The existing factors that can lead to male infertility and influence the sperm quality, can be divided into two categories: the non -obstructive and the obstructive causes.

The non-obstructive causes are associated with spermatogenesis disorders. Some of them are:

- Men with microdeletions affecting the Y chromosome
- Klinefelter syndrome
- Cryptorchidism
- Trauma
- Endocrine disorders
- Excessive Heat of testicles

- Varicocele /inguinal hernia
- Drugs(anabolic, steroids, alcohol, smoking)
- Toxins
- Chronic diseases(diabetes mellitus ,cystic fibrosis, renal insufficiency)
- Urogenital inflammations (by genital herpes, chlamydia, ureaplasma etc.)
- Chemotherapy/radiotherapy
- Lack of vitamins and minerals
- destruction or inactivation of sperm by sperm antibodies

The obstructive causes usually affect the male genital system after testicular sperm production and include defects of the genital tract as well as problems in ejaculation:

- Vans deference obstruction
- Ejaculatory duct obstruction
- Absence of both seminal vesicles
- Vasa deferentia may also be absent in men due to mutations of *CTFR* that do not cause symptomatic cystic fibrosis

Diagnosis

The diagnosis of male infertility is usually indicated by:

1. Medical history
2. Clinical examination
3. Hormonal test (FSH, testosterone levels etc.)
4. Semen analysis: This is the most common type of fertility testing. There must be sexual abstinence from 3-5 days, and must be done twice in a three-month time. If oligozoospermia or azoospermia is detected (decreased number of spermatozoa in semen), genetic testing should be done.
    I. Standard karyotyping
    II. PCR of tagged chromosomal sites (to detect microdeletions affecting the Y chromosome)
    III. Evaluation for mutations of the CFTR gene