

Infertility

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Abstract

Infertility is generally defined as the inability of a couple to conceive a child even after one year of frequent unprotected sex.[1] It affects about 15% of all couples in the United States and at least 180 million worldwide. Male infertility is defined as a man's inability to make a fertile woman pregnant after at least one year of unprotected intercourse. Men are solely responsible for approximately 20% and are a contributing factor in another 30% to 40% of all cases of infertility.[3] Because male and female causes often coexist, it is important that both partners are evaluated for infertility and treated together. In general, the male factor makes a significant contribution to approximately 50% of all cases of infertility.

Key words: Sexual dysfunction, hypogonadism, oligozoospermia, asthenozoospermia, teratozoospermia.

Background: There are several causes of male fertility, including both reversible and irreversible conditions. Other factors that may affect each partner may include their age, medications, surgical history, exposure to environmental toxins, genetic problems, and systemic diseases. The primary purpose of evaluating a man for infertility is to identify his contributing factors, offer treatment for reversible ones, determine whether he is a candidate for assisted reproductive technology (ART), and offer counseling for irreversible and incurable conditions.[4] In rare cases, male infertility may be a warning sign of a more serious condition. This is an additional reason to conduct a comprehensive assessment of the male partners of infertile couples; so that any serious underlying medical conditions can be identified and treated.[5]

Materials and Methods: There are many causes of male infertility, which can be broadly classified due to their common etiology. These include endocrine disorders (usually due to hypogonadism) in about 2-5%, sperm transport disorders (eg, vasectomy) in 5%, primary testicular defects (which involve abnormal sperm parameters without any identifiable cause) in 65- 80%. And idiopathic (when an infertile man has normal semen and semen parameters) from 10% to 20%.[6] These are general estimates as precise statistics are not available due to general underreporting, cultural factors and regional differences. Patients referred to a tertiary referral center are more likely to report their condition, while private patients may never have their data collected. A partial overview of specific etiologies is provided below:

Endocrinologic causes include congenital GnRH deficiency (Kallmann syndrome), Prader-Willi syndrome, Lawrence-Moon-Beidl syndrome, iron overload syndrome, familial cerebellar ataxia, head trauma, intracranial radiation, testosterone use, or hyperthyroidism.

Idiopathic - idiopathic male infertility (from 10% to 20%), in which all sperm parameters are normal, but the man remains infertile.

Genetic causes - cystic fibrosis transmembrane conductance regulator (CFTR) mutations, primary ciliary dyskinesia, Kallmann syndrome, Klinefelter syndrome, Young syndrome, Sertoli cell only syndrome, Kal-1, Kal-2, FSH, LH, FGFS, GnRH1 /GNRHR PROK2/PROK2R gene deficiency, chromosomal abnormalities, Y-chromosome microdeletion, AR mutations, gr/gr deletion.

Congenital urogenital anomalies - absence, dysfunction or blockage of the epididymis, congenital anomalies of the vas deferens, undescended testicles, disorders of the vas deferens (cysts).

Acquired urogenital anomalies - bilateral obstruction or ligation of the vas deferens, bilateral orchiectomy, epididymitis, varicocele, retrograde ejaculation.

Immunological cause - lymphocytic hypophysitis, hemosiderosis, hemochromatosis, sarcoidosis, histiocytosis, tuberculosis, fungal infections,

Infections of the genitourinary tract - gonococci, chlamydia, syphilis, tuberculosis, recurrent urogenital infections, prostatitis and recurrent prostatovesiculitis.

Sexual dysfunction – premature ejaculation, anejaculation, rare sexual intercourse, erectile dysfunction.

Malignant neoplasms - sellar masses, pituitary macroadenomas, craniopharyngiomas and surgical or radiation treatment of these conditions, testicular tumors or adrenal tumors leading to androgen excess.

Medicines or narcotics - cannabinoids, opioids, psychotropic drugs can cause GnRH inhibition, administration of exogenous testosterone or androgenic steroids, GnRH analogues and antagonists used for prostate carcinoma, chronic glucocorticoid therapy, alkylating agents, antiandrogens, ketoconazole, cimetidine.

Environmental toxins - insecticides, fungicides, pesticides, smoking, excessive alcohol consumption.

Male infertility can also be classified based on medical interventions that can potentially promote conception.[7]

In 12% of cases, incurable male infertility is observed - primary failure of the seminiferous tubules, Sertoli cell syndrome only, bilateral orchiectomy.

Treatable causes of male infertility are found in 18% of cases - obstructive azoospermia, cysts of the ejaculatory ducts and prostate gland, gonadotropin deficiency, sexual dysfunction, sperm autoimmunity, varicocele and reversible effects of toxins.

In 70% of cases, incurable male infertility occurs - oligozoospermia, asthenozoospermia, teratozoospermia, normospermia with functional defects. Reproduction will require assisted reproductive technologies.

The purpose of assessing the male partner of a couple suffering from infertility is to determine whether male factor is contributing to the infertility problem to identify the small percentage of cases (about 20%) that can be normalized with treatment to determine whether assisted reproduction will benefit technique (ART) ultimately, the couple begins with a complete and comprehensive sexual and medical history, including reproductive history, family history. Sick cell anemia can cause intrapopular ischemia. Chronic renal failure has been associated with hypogonadism, while liver failure causes gynecomastia (from increased estrogen levels), testicular atrophy, and decreased secondary sexual characteristics. Tuberculosis, prostatitis, epididymitis and STIs (especially gonorrhea) can cause vascular scarring and obstructive azoospermia, while mycoplasma infections tend to reduce sperm motility. The use of sexual lubricants that are toxic to sperm (such as water-based, water-soluble personal lubricants, saliva and others) should be eliminated. Non-toxic lubricants would include egg whites, peanut oil, and vegetable oil. Vaseline is not particularly spermatotoxic, but is still not recommended due to its viscosity. During the physical examination, it is important to look at body shape, as well as check for possible signs of endocrinopathy, gynecomastia, skin distribution, hair distribution and, in particular, secondary sexual characteristics. If the patient appears muscular and has a low sperm count, do an endocrine screening panel as he may have very low LH, suggestive of testosterone abuse. Obesity tends to increase the peripheral conversion of testosterone to estrogen. This lowers LH levels and has been associated with decreased sperm count. The penile examination will include testing for hypospadias, phimosis, and Peyronie's plaques. The size of the testicle must be measured. In a normal adult male, the volume of the testicle should be at least 15 ml, and the length of the testicle should be at least 4 cm. If the testicle measures less than 4 cm at its greatest size, it is considered "small". The presence or absence of the vas deferens should be noted and documented. Bilateral absence of VAS has been reported in 1–2% of infertile men and is associated with mutations in the cystic fibrosis transmembrane conductance regulator (CFTR) gene, even in the absence of any clinical signs of cystic fibrosis. [8] Any clinical testicular abnormalities such as epididymal lesions, spermatozoa, and large varicoceles should be identified. The presence of a hydrocele should be noted. If a hydrocele is present, testicular ultrasonography must be used to examine the testis because adequate direct physical examination is not otherwise possible. Testosterone deficiency can cause various physical signs depending on its severity and age of onset. Hypogonadism in early pregnancy results in atypical genitalia, but in late pregnancy it causes micropenis. Hypogonadism in childhood causes delayed puberty, while in adults it causes decreased libido, erectile dysfunction, decreased

body hair, infertility, and loss of secondary sexual characteristics. Varicoceles, which can be identified on physical examination, may be clinically significant regarding possible infertility. Varicoceles are the most common correctable cause of male infertility, so their presence should be carefully checked. They are relatively easy to identify even with a simple physical examination. Varicocele is present in 15% of men, but in those with abnormal semen analysis the incidence increases to 40%. [9] It is believed that only clinically significant varicoceles are thought to affect male fertility, but this is somewhat controversial. [10] [11] [12] [13] When present, varicoceles are usually found on the left side for anatomical reasons.

Results: Without treatment, some infertile couples still manage to become pregnant. Studies have shown that 23% of untreated infertile couples become pregnant after 2 years, and after 4 years this figure reaches 33%. Even in men with severe oligozoospermia (<2 million sperm/ml), 7.6% of untreated male infertility patients are able to have children within two years.[14] Treatment with clomiphene, tamoxifen, aromatase inhibitors, carnitine, and antioxidants may also be effective.

Conclusions: Coordination of care should be carried out by a family doctor, urologist, endocrinologist and andrologist with experience in diagnosing and treating male infertility. It is recommended that primary health care initiate the evaluation of infertility by identifying the problem early and making appropriate referrals. It is also appropriate to provide genetic counseling to couples with clinical or genetic testing abnormalities or those who are carriers of a potentially inherited disease.

Although many causes of male infertility are related to impaired spermatogenesis, some of them are medically treatable. This problem has serious psychological, social, emotional and medical consequences for the couple as well as their families. Barriers to infertility stigma arising from religious and cultural beliefs should be addressed and reduced where possible.

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