

Andrology Solutions: Diagnostic testing

SEMEN ANALYSIS

The single most important factor determining a man's fertility potential is the production of healthy sperm. A semen analysis has classically been used as a marker of a man's fertility potential. It is important to recognise that while a sperm count, motility and morphology assessment is extremely important, it is by no means the whole story. Indeed, current guidelines for a full semen analysis include investigation of a whole variety of other semen parameters that are all too often overlooked in the diagnosis of male infertility

A fully comprehensive semen analysis provides information about the function of the pituitary gland, the testes, accessory glands and spermatogenesis. Seminal fluid anomalies may be important in recognising dysfunction of the male accessory glands, prostatic disease, or genital tract tumour. A MAR test looks for antisperm antibodies which can indicate immunological infertility. The presence of white cells may be indicative of inflammation or infection. More evidence is coming to light associating infection with infertility.

Appropriate testing and accurate interpretation of the results is therefore vital to achieve a reliable diagnosis for male factor infertility. Men should be offered a full comprehensive semen analysis so that nothing is overlooked. It is also vital to observe appropriate length of abstinence and to ensure the sample is assessed within an hour or two of producing it, as results may otherwise be unreliable.

ADVANCED SPERM TESTING

Antisperm Antibodies

Immunological infertility occurs when antibodies are produced to the sperm. Antibodies are normally produced only as a result of an immune reaction in response to foreign bodies. If there is trauma, surgery or infection in the groin area, antibodies may be produced to your sperm which may decrease sperm motility, cause agglutination, interfere with sperm transport through the cervix and affect fertilisation. Antisperm antibodies can be detected by a MAR test in semen or by a blood sample assay.

Sperm Motility and Vitality Improvement

This is a new programme developed for patients whose sperm show little motility or viability. The test determines whether the semen or epididymal environment where the sperm is stored just prior to ejaculation is toxic to the sperm, and in some cases, a significant improvement can result.

Sperm Survival

Sperm should be able to live for several days in the female reproductive tract, to increase the chances of the presence of sperm at the precise time of ovulation. This test involves preparing the sperm in a fluid that mimics the female tract environment and checking sperm motility after 24 hrs



ANDROLOGY SOLUTIONS

Dedicated to male fertility

Retrograde Ejaculation

Sometimes, a man will reach orgasm without producing an ejaculate. This is usually due to an incomplete closure of the bladder neck at ejaculation, resulting in transport of the ejaculate back into the bladder. This is known as retrograde ejaculation and is commonly found in men with diabetes or spinal cord injury. Some medications are also associated with retrograde ejaculation. To check for this condition, we look for sperm in an entire urine sample produced immediately after a man has tried to ejaculate.

GENETIC TESTING

A full detailed semen analysis is limited in the information it can provide. While it gives us a lot of information about whether there are sufficient sperm moving well enough to reach the egg, it tells us nothing about the ability to bind to the egg once it gets there, and nothing about the genetic integrity of the sperm.

Of course by far the greatest contribution from a sperm to the embryo is that of its genetic constitution, which is key to an ongoing pregnancy. Fortunately, there are now tests available to assess various aspects of the sperm chromatin which may give us clues to the male contribution toward failure to conceive or recurrent miscarriage. Chromosome defects are the major cause for very early embryo loss. Genetic defects in sperm and eggs can be inherited or congenital, or may occur following exposure to occupational or environmental toxins, ionizing radiation, UV light, certain drugs, chemo- or radiotherapy, infection, caffeine, alcohol and smoking. Age also has a huge impact on the genetic quality of eggs and sperm.

Blood Chromosomes (Karyotype)

This test looks for major chromosomal defects. It is useful for prolonged unexplained infertility, recurrent miscarriage and men with sperm counts consistently less than 5 million/ml

Y-Chromosome Deletion

This test looks for small areas on the Y chromosome that are missing and could be the cause of sperm counts consistently less than 5 million/ml

DNA Fragmentation in Sperm

This is a state-of-the-art test that looks for breaks in the genetic make-up of the sperm itself. There is a direct correlation between sperm DNA damage and pregnancy rates. DNA fragmentation is high in men with male factor infertility, in men with unexplained infertility and in male partners of women with recurrent early miscarriage or failed IVF/ICSI

Sperm Aneuploidy

This is another state-of-the-art test that checks sperm directly for absences or repeats of entire chromosomes. This test is useful for investigating prolonged unexplained infertility, failed IVF/ICSI, recurrent early miscarriage

Cystic Fibrosis Screening

As many as 15% men with severely low or no sperm, may be carriers for cystic fibrosis

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HORMONE PROFILES

Male fertility is dependent upon a fine balance of various hormones. An imbalance of these hormones may impair fertility. The tests measure levels of the major reproductive hormones in blood, and are useful for men with low sperm counts, or lack of libido. Hormone imbalances are associated with obesity, which results in poor semen quality in such men.

ENVIRONMENTAL TESTING

Metals in Blood

Toxic metals in our environment e.g. lead, cadmium, affect sperm quality and prevent fertilization. This test looks at levels of harmful metals as well as those that are protective. It is useful for men who have poor sperm quality, poor IVF fertilisation rates, unexplained infertility and varicocoele. Men exposed to cigarette smoke, increased alcohol, occupational or environmental toxins may also be exposed to harmful levels of heavy metals.

Anti-oxidant Status

Free radicals (Reactive Oxygen Species) damage the sperm surface, decreasing motility and viability and increasing abnormal shapes. They can also damage DNA. ROS are produced by environmental pollution, ionising radiation, UV light, infection, cigarette smoke and excessive exercise. The body has an anti-oxidant system to control ROS levels and repair the damage. This test assesses total anti-oxidant status (TAS). TAS levels are lower in infertile men and the test may be useful for men with poor sperm quality or unexplained infertility

WELL MAN SCREENING

Keeping yourself generally fit and healthy will ensure that you optimise your reproductive health. Many unrelated conditions such as diabetes, result in impairment of sperm quality. A well man screen can look at biochemical markers that can indicate any potential problems.