

Original paper

Pattern of Seminal Fluid Analysis among Subfertile Couples in Kerbala Maternity Hospital during 2012

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Abstract

Background: Infertility subject couples to great distress. In Iraq, women are often blamed while men assumed innocence. The blunt of infertility is often ignorantly borne by women, Male infertility continues to be a clinical challenge of increasing significance. While male factors such as decreased semen quality are responsible for 25% of all infertility issues, the etiology of suboptimal semen quality is poorly understood. Many physiological, environmental, and genetic factors have been implicated.

Aims: To assess the semen characteristics subfertile couples in the karbala

Study Design: A cross-sectional study

Place and Duration of Study: This study was carried out at Karbala Maternity Hospital, Karbala-Iraq. Because the subfertility unit is currently found there

Methodology: We retrospectively study the couple medical record files who suffer from subfertility during the period (1st of January 2012-to31 of december 2012). Seminal fluid test (manual) data found in files were reviewed using the WHO criteria (parameters) for SFA paying attention to semen volume, concentration, motility, morphology and culture results.

Results & Discussion: From 426 couples file that been studied three hundred twelve (312) contain that test in their files involved in our study and their seminal fluids analyzed. While we exclude 114 (26.8%) of files haven't contain the test. from our sample (312) Seminal Fluid Analysis was normal in133 files about 42.6% of subfertile couples. Abnormality ranges from mild oligospermia to severe oligoasthenospermia and finally to azoospermia (No Active sperms) at all. Single Parameter abnormality constitutes about 35.8% mainly asthenospermia 16% and pyospermia 7.7% while more than one abnormality constitutes about 21.3%.

The number 114 (26.8%) that have no SFA reflects the low awareness that infertility is a problem of the couple and not of a woman only., Pyospermia was founded in about 16.8% of patients suggesting that genital tract infection is a respective cause. Unfortunately, no semen culture was done and most of patients treated empirically.

Conclusion and Recommendations: There is a need to evaluate male partner in any infertility case. Genital Tract Infection was a major cause and patients with pyospermia should be sent for Semen Culture and also should not be empirically treated.

Key words: pattern, seminal fluid, subfertile couples, kerbala

Introduction

One of the main reasons for marriage is procreation ⁽¹⁾. Infertility subjected both couples to great distress ⁽²⁾. In Iraq, women are often blamed while men assumed innocence. The World Health Organization defines infertility as the inability of a couple to achieve conception or bring a

pregnancy to term after 1 year or more of regular, unprotected sexual intercourse ⁽³⁾, Infertility is a major clinical concern, affecting 15% of all reproductive-aged couples, and male factors, including decreased semen quality, are responsible for 25% of these cases. In recent years, there has been a growing concern regarding the progressive decline in male

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fertility. Different studies ⁽⁴⁾ primarily based on the microscopic analysis of semen samples, as dictated in the guidelines of the World Health Organization (WHO) ⁽⁵⁾, support this affirmation.

However, the issue is controversial, and there is a lack of consensus that keeps the debate open. A relevant percentage of apparently normal males are unable to impregnate a woman, even when the female is also considered to be normal. Various studies report incidence of..

20-30 % ⁽⁶⁾. In Western countries, 10-15% of couples experience infertility ⁽²⁾. Male partners directly account for 25-30% of infertility and contribute to another 25 % ^(2, 6).

In majority of cases of male infertility, the causes of abnormal semen parameters are unknown ⁽²⁾. However, some of the etiologies are genital tract infections leading to obstructive azoospermia/oligospermia ^(6, 7).

Tuberculosis, gonococcal and Chlamydia infections are common ^(2, 9). Bilateral viral orchitis especially after 12 years of age impair sperm parameters ⁽²⁾. Congenital abnormality (cryptorchidism) and chromosomal disorders also contribute to sperm abnormality ⁽²⁾. The role of varicocele is inconclusive. It occurs in 12% of normal men ^(2, 9).

However, studies showed that varicocelectomy improved sperm parameters ^(6, 10). Tobaccos, alcohol, cannabis, drugs and wearing of tight underwear are also implicated ⁽²⁾. The task before an infertility clinic is to make diagnosis of the actual cause of infertility, and seminal fluid analysis (SFA) is very important in this regard ⁽⁹⁾.

W.H.O criteria for semen analysis are used in this hospital for SFA

W.H.O criteria for SFA:

- Volume 2ml or more
- PH 7.2-7.8
- Sperm conc. $>20 \times 10^6$ cell/ml
- Motility $>50\%$ forward movement
- Morphology $>30\%$ normal form

- WBC $< 1 \times 10^6$ cells/ml

Abnormal sperm parameters:

- Aspermia- no ejaculate
- Azoospermia-no sperm cell
- Oligospermia- $<20 \times 10^6$ sperm/ml
- Severe oligospermia- $<5 \times 10^6$ /ml
- Asthenozoospermia-abnormal motility
- Teratozoospermia-abnormal morphology

Morphology has become an important parameter to evaluate the quality of sperm and fertilization capability. Kruger reported a new classification based on strict sperm morphology after fixing and staining the sperm ⁽⁹⁾. Specific biochemical analyses relevant to accessory sex gland function can be performed using the semen sample. These include fructose from the seminal vesicles, zinc and acid phosphatase from the prostate gland, and α -glucosidases and carnitine from the epididymis ⁽⁹⁾. Sperm agglutination is an indirect indicator of the presence of anti-sperm antibodies. The immunobead test can be performed either directly on the sperm or indirectly on sperm and blood. Surface antibodies against immunoglobulin A (IgA) or immunoglobulin G (IgG) may be present. The antibodies can be specific for the head or for the tail of the sperm. IgA sperm antibodies interfere with the sperm-oocyte interaction and account for decreased fertilization, whereas IgG sperm antibodies are more responsible for impaired sperm motility. Anti-sperm antibodies are associated with infection (orchitis), testicular trauma, and a history of vasectomy ⁽⁹⁾.

Interpretation of semen analysis

Spermatogenesis takes approximately 72 days. Abnormal semen analysis results can be attributed to various unknown reasons (short period of sexual abstinence, incomplete collection, poor sexual stimulus); therefore, repeating the semen analysis at least 10 days later is important before a diagnosis is made. The patient should be informed of the normal

fluctuation that can occur between semen samples⁽⁹⁾.

Azoospermia indicates absence of sperm that could result from congenital absence or bilateral obstruction of the vas deferens or ejaculatory ducts, spermatogenesis arrest, Sertoli cell syndrome, or post-vasectomy⁽⁹⁾.

Oligozoospermia indicates a concentration of fewer than 20 million sperm/mL and may be associated with ejaculatory dysfunction such as retrograde ejaculation, genetic conditions, or hormonal disturbances⁽⁹⁾.

Asthenozoospermia indicates sperm motility of less than 50%. This can be caused by extreme temperatures and delayed analysis after sperm collection⁽⁹⁾.

Teratospermia indicates an increased number of abnormal sperm morphology at any level⁽⁹⁾.

Hypospermia indicates a decrease of semen volume to less than 2 mL per ejaculation⁽⁹⁾.

Materials and Methods

Study location and time: Karbala maternity hospital from 1st January 2012-31- december 2012

Study population: All medical records files of couples attended to the infertility clinic in karbala maternity hospital

Study design and setting

A cross-sectional study was carried out at Karbala Maternity Hospital, Karbala Maternity hospital dedicated to maternal and child health. we retrospectively studied 426 of patient medical record files belongs to couples managed for infertility during the period (1st of January 2012 to 31 december 2012). Concentrated mainly of the SFA in those files.

Seminal fluid analysis had been done manual or by computed assisted sperm analysis (CASA) in different private laboratories outside the hospital we don't concentrate on the differences between test done by CASA and that done manual . Seminal fluid data were reviewed paying

attention to semen volume, concentration, motility, morphology and culture results. We evaluate those test found in file using the criteria and the parameters of WHO for SFA

Inclusion criteria: all patient medical record files contained the SFA exploring their investigations and follow-up and any other information about male partner

Exclusion Criteria:

We had excluded any file from our study does not contain SFA record.

Results

From 426 couples file that been studied three hundred twelve (312) couple have SFA in their files included and analyzed while 114 (26.8%) of files haven't contain the SFA

Seminal Fluid Analysis was normal in about 133 (42.6%) of sample . Abnormality ranges from mild oligospermia to severe oligoasthenospermia and azoospermia (No Active sperms at all). Single Parameter abnormality constitutes about 112 (35.8%) mainly asthenospermia 50 (16%), oligospermia 11 (3.5%), positive agglutination 11 (5.5%), small volume (less than 2mls) 10 (3.2%) ,azoospermia 6 (1.9%) and pyospermia 24 (7.7%) while more than one abnormality constitutes about 67 (21.3%.) as shown in Table 1.

Discussion

The presence of 114 (26.8%) that have no SFA reflects the low awareness that infertility is a problem of the couple and not of a woman only and reflects that there is no policy in this unit to put a protocol to manage both couples at same time in same place , Our results shows 10 (3.2%) of cases had low semen volume compares with other workers^(8,9) Low semen volume impairs sperm biochemical interactions and vehicular movement of spermatozoa^(4,11). 9.3% had Asthenopyospermia,

compare to 40% in study of JOHN N. et al ⁽¹²⁾

Table 1. parameters of Seminal Fluid Analysis

Parameter	(No)	Percent %
Normal	133	42.6
Oligospermia	11	3.5
Asthenospermia	50	16.0
Pyospermia	24	7.7
Positive Agglutination	11	3.5
Small Volume	10	3.2
azoospermia	6	1.9
Oligospermia +asthenospermia	10	3.2
Asthenospermia +pyospermia	29	9.3
Asthenospermia + Small Volume	6	1.9
Oligospermia + Small Volume	1	.3
Pyospermia+ Agglutination	9	2.9
Asthenopyospermia +Small Volume	1	.3
Pyospermia + Small Volume	1	.3
Asthenopyospermia +Agglutination	5	1.6
Oligospermia +pyospermia	1	.3
Asthenospermia + Agglutination	2	.6
Pyospermia + Agglutination + No Active Sperms	2	.6
Total	312	100.0

7.7% had Pyospermia, 2.9% had Pyospermia and agglutination, 0.3% had Asthenopyospermia and Small Volume, 0.3% had Pyospermia and Small Volume, 1.6% had Asthenopyospermia with Agglutination, and 0.6% had Pyospermia and Agglutination with No Active Sperms. In Total Pyospermia was founded in about 22.7% of patients as compare to 29% in study of JOHN N. et al ⁽¹²⁾ suggesting that genital tract infection is a respective cause. Unfortunately, no semen culture was done and most of patients treated empirically. The prevalence of oligospermia and No Active sperms at all is 2.6% and 1.9% respectively in this study. This is lower than results from other studies ⁽¹²⁻¹⁶⁾. Sample size and laboratory influence may be responsible for this disparity. The contribution of varicocele to this is inconclusive ^(7, 11). There was lower prevalence of abnormal sperm motility in this study which was only 11.6% as opposed to higher prevalence reaching 60% and 54% reported by other workers conducting previous studies. ^(11, 16)

The high infection rate may reflect penile contamination. It may also reflect true infection which accounts for the high

abnormal sperm parameters in this study⁽¹⁷⁾.

Conclusions and recommendation

There is high male infertility rate in our environment. There is need to evaluate male partner in any infertility case⁽¹⁸⁾. Genital Tract Infection was a major cause and patients with pyospermia should be sent for Semen Culture and no treated empirically. And the high rate of absence of SFA in patient file need to be concentrated on by putting a strict instructions in hospital regarding how the couple should be treated and clear regulations about patient file and clear policy of follow-up and audit for these instruction

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