Journal of Medicine, Physiology and Biophysics
ISSN 2422-8427 An International Peer-reviewed Journal DOI: 10.7176/JMPB
Vol.57, 2019

Study the Some Semen Parameters of Fertile and Infertile Male in Misan Province

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Abstract
Background: Infertility in human is described as a situation in which a couple (male and female) does not succeed in achieving pregnancy despite of unprotected sexual intercourse over a period of 12 months. The aim of the current study was to collect and analyses quantitative baseline data about the males suffering from the impaired infertility in Misan province. **Material and Methods**: semen samples have been collected and examined for 60 married male suffering from impaired fertility group and 19 health's married male as a control. **Results**: In regards to the mean volumes of seminal fluid and the pH values, the results showed that there were no statistically significant difference between infertile and control group. However, the results revealed the differences between the control and the infertile groups were highly significant for the total sperm count ($p < 0.01$).In terms of the percentage of normal and abnormal sperm morphology, were no significant differences between the control and the infertile groups. The percentage of active sperm motile was significant ($p< 0.05$) in the control group compared with the infertile group. While the percentage of non motile sperm was significant ($p< 0.05$) in non fertile males in comparison to the males in the control group. Differences between the control and the infertile groups were non-significant regarding the percentage of weakness and sluggish sperm. The varicocele was the higher percentage while hormonal disorder was the lower percentage than the other causes. The incidence of infertility was more common among men in urban population compared with infertile men in rural population with a significant difference of ($p < 0.01$).
Key words: semen, fertile, subfertile , male, Misan
DOI: 10.7176/JMPB/57-04
Publication date: July 31st 2019

Introduction

Infertility in human is described as a situation in which a couple does not succeed in achieving pregnancy despite of unprotected sexual intercourse over a period of 12 months (Parsanezhad *et al*.,2013 ; Punab *et al*., 2017). Infertility is a well known health issue affecting all over the world, it present a particularly vexing clinical problem, it affects about 15 % of couples trying to have a child (Agarwal, *et al*., 2015) . Infertility in male is defined as the inability of the male reproductive cells to produce mature, actively motile and functional spermatozoa in sufficient amount that will ensure fertilization of a released ovum in the fallopian tubes of the female (AL Basher,2016). Impaired fertility of the male is causative in 20% of infertile couples and contributory in up to another 30 – 40% (Ferlin *et al*.,2006). There are many factors that are associated with infertility in men other than the healthiness of the spermatozoa. These could include the presence of varicocele, sexual dysfunction, genital tract infection, inflammation and urospermia. Age, nutrition, hormonal disorder, chromosomal abnormalities, stress and emotions, excessive alcohol consumption, environmental factors and non- diagnosable causes could be the possible factors that may affect the male infertility (Olooto, 2012; Skakkebaek *et al.,* 2016 ; Salas-Huetos *et al*.,2017).

The differences in sperm characteristics between fertile and infertile men were first reported by Macleod and Gold (1951 a;1951 b). Semen parameters are considered in different methods on the basis of the clinic settings: as part of infertility examination or follow up of infertility treatment (Zinaman *et al*.,2000). The world health organization manual for the examination of human semen and sperm, cervical mucus interaction (WHO, 1992; WHO, 1999) provides guidelines for assessment many semen parameters ; However, it is still difficult to compare the results between different laboratories. Furthermore, many studies have indicated that the geographical differences in semen quality may be related to environmental factors, ethnic or genetic differences (Kamieniczna *et al*.,2015; Ayad *et al*.,2018). In many provinces in Iraq, semen analysis is routinely done through the conventional microscopy method, culture, hormonal evaluation and special sperm function tests. Clinical evaluation of seminal quality is linked to the ability to predict the fertility aspects such as, identify the causes of infertility and detect changes in potential fertility (WHO, 1992). The aim of the current study was to collect

baseline information about the patients suffering from the infertility in Misan province .

Materials and Methods

Study design and subjects

This study was carried out in Al-Sadder general hospital / Maysan province for the period between 15 / 10 / 2013 to 15 /3 / 2014 ,the samples were collected from 60 married male suffer from impaired fertility at age group of (18 – 42) year, and 20 married male as a control age group of (21 – 45) year.

Semen analysis

All the semen samples were examined for physical parameters such as. Volume, pH .In addition , the percentage motility and sperm concentration were analyzed according to the standard WHO parameters (WHO,2010).

Statistical analysis

The Statistical analysis was calculated for the study results by SPSS (2001).

Results

This study was carried out on infertility hospitalized population of 60 patients in Maysan province and 20 men as a control. The mean volumes of seminal fluid were 3.3 ml for the control group and 3.1 ml for the patients group. The pH value was 8.4 in the control group while it was recorded 7.9 in the patients group. The differences between the control and patients groups were high significant $p < 0.01$ for the total sperm count (mean 103.33 and 46.96 x 10^{6}), as shown in table (1).

The difference between normal and abnormal sperm morphology were non-significant for the control and infertile group percentages (78.68 % and 69.58 % for the normal sperm morphology; 21.32% and 30.42% for abnormal sperm morphology) as shown, as shown in in table (2).

The percentage of active sperm motile was significant ($p< 0.05$) 30.40 % for the control group compared with the infertile group (8.93 %).While the percentage of non motile sperm was significant ($p< 0.05$) 42.47 % for infertile group compared with the control group (19.60 %). Differences between the control and the infertile groups were non significant for the percentage of weak and sluggish sperm (25.67% and 18.38 for the weak sperms, 24.33% and 30.22 % for the sluggish sperm), as shown in table (3).

The percentage of the diseases distribution in the infertile group is shown in table (4). varicocele was the highest (43.33%) and hormonal disorder was the lowest (20 %) , while the non causes recorded 6.67% percentage . The incidence of infertile men was significant 83.3% ($p < 0.01$) in urban population than in rural population 16.7% table(5).

Discussion

In this study, semen from men who suffered infertility was analyzed in order to establish reference values for semen parameters. Semen analysis though routinely used to evaluate the male partner in an infertile married status. Sperm measurements that vacillated between fertile and infertile values are not well defined (Morin and Scott, 2018). The comparison of the differences in a control and infertile population for semen variables can be examined in most laboratories (Ali and Abboud, 2014). For sperm concentration, many studies have maintained a large and overlapping distribution in the fertile (control and subfertile) population (Lee *et al*., 2012; Levine *et al*., 2017) .Olajuba *et al*. (2013) found that nearly 51.5% whose sperm concentration below 20×10^{6} cell / ml could equally be a source or could contribute in infertility. In another study, 42.5 % of the subjects had a sperm count of less than 20×10^{6} cell / ml, while 53.2% had sperm motility of less than 50% (Loto, 2004). The WHO changed its cut – off value for normality (from 50 to 30 %). Surprisingly, this change was not based on any biological data – yet another reason to investigate the power of sperm morphology to predict subfertility *in vivo* (Omscbelet *et al*., 1997). The etiology of male infertility in the population seems to be unrelated to sperm volume but related to sperm count, motility and morphology (Nwafia *et al*., 2006). In this study the value of pH in semen for fertile men is agreement with the study by Haugen *et al*.(2006) which found the pH of Norwegian fertile men is 8.3.

Urogenital tract infection in male is one of the important causes for men infertility. The results in this study is in agreement with the results of Golshani *et al*. (2006) and Ekwere *et al*. (2007) they found the urogenital

infections are one of the causes of infertility among male. In this study the percentage of urogenital infection among men was 43.33% while in study by Ekwere *et al*. (2007) the percentage of urogenital infection was recorded 34.7%. The etiological role of infection in male infertility has been paid attention in recent years. The seminal fluid constituted is an important medium for the spread of various infective agents, and those genital infections through sexual and nonsexual pathway may be responsible for a high percentage of infertility (Abarikwu, 2013). Endocrinology is the presence of an abnormality in the serum hormonal panel without necessarily implying a primary endocrine cause of infertility. Endocrine abnormalities are common in azoospermic infertile males. Other causes of male infertility include societal pressure leading to psychological problems. Psychological factors and stress – induced changes in heart rate and cortisol are predictive of a decreased probability of achieving a viable pregnancy (Sheiner *et al*.,2003).

Conclusion

The infertility is a concerned health and social problem in the studied population. These data may provide useful information to help these men.

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DOI: 10.7176/JMPB

Table (1): Semen parameters in the patients and the control groups.

Parameters	Patients group	Control group	P value
Volume (ml)	3.1	3.3	NS
pH (unit)	7.9	8.4	NS
Count (sperm/ 10^6)	46.96 ± 11.42	103.33 ± 24.09	0.01

Table(2): Percentage distribution of sperm morphology.

Morphology (%)	Patients group	Control group	P value
Normal	69.58	78.68	NS
Abnormal	30.42	21.32	
Total	100	100	

Table (3): Percentage distribution of sperm motility.

Motility (%)	Patients group	Control group	P value
Active sperm	8.93	30.40	0.05
Weak	18.38	25.67	NS
sluggish	30.22	24.33	NS
Non motile	42.47	19.60	0.05
Total	100	100	

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Table (4): percentage distribution of the diseases in the infertile group

Diseases	Number	Percentage %	P value
Varicocele	26	43.33	0.01
genital tract infection	18	30	
hormonal disorder	12	20	
non causes	4	6.67	
Total	60	99.99	

Table (5): percentage distribution of the infertile men according to the area

Infertile men Population	Urban	Rural
Percentage (%)	83.3	16.7
Total	100	