Seminal Fluid and Hormonal Profiles among Iraqi Patients with Male Infertility

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Abstract

Objective: The aims of this case-control study were to identify the seminal fluid patterns in Iraqi men with infertility as well as in fertile controls. Also, to demonstrate the types of serum hormones (Follice Stimulating Hormone (FSH), Leutinizing (LH), Testosterone and Prolactin) abnormalities in the study groups.

Materials and Methods: 81 Iraqi men with infertility and 30 fertile men who fulfilled the selection criteria to whom Seminal Fluid Analysis (SFA) was performed according to WHO method. The patients group was subdivided by sperm concentration into azoospermic, oligoasthenozoospermic and oligozoospermic subgroups. Serum levels of the hormones (Testosterone, FSH, LH and Prolactin) were measured for patients and controls using ELIZA immunoassays. Seminal fluid analysis parameters mean levels and serum hormone levels were compared for the groups using Analysis of Variance test.

Results: Iraqi infertile men showed lower values for SFA parameters than did the controls. Patients with azoospermia showed the most remarkable hormonal abnormalities especially in the levels of serum FSH and Testosterone. Patients also demonstrated multiple abnormalities in seminal fluid parameters. There were significant differences in the serum sex hormone levels between the patients and control groups and among the infertile men subgroups.

Conclusion: Seminal fluid abnormalities among Iraqi patients with male infertility are multi-components. Hormonal profiles for these patients do not follow a single pattern. Patients with low sperm concentration and especially those with azoospermia are those that most likely will get benefit from hormonal assays. Serum FSH and Testosterone are the best 2 hormones for initial male infertility evaluation.

Keywords: Male Infertility, Seminal Fluid Analysis, FSH, LH, Testosterone, Prolactin.

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Introduction

Infertility is one of the most common disorders to afflict young men and women. It is defined as the inability to conceive after 12 months of regular unprotected intercourse. It affects 10-15 percent of all couples. The causes of infertility can be divided into four major categories: (1) the female

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factor; (2) the male factor; (3) combined factors; (4) unexplained infertility. In roughly half of the cases, a male factor is identified, while an occult male factor may be involved in 15-24 percent of the cases in which no etiology is uncovered ("unexplained" infertility). Using this approach (medical history and physical examination with testicular volume assessment, semen analysis, and hormone measurement), a definite diagnosis of the cause of male infertility can be obtained in approximately 70% of the cases. [1, 2]

Sperm evaluation has moved away from subjective analysis to more objective means of assessing cell morphology, dimensions, functions, and the underlying mechanisms that ultimately lead to successful fertilization and generation of viable offspring. [3] In the management of the infertile male, it is important to understand how the common endocrinopathies may cause testicular and sexual dysfunction. Normal function of the gonads is dependent upon an adequate production of the trophic hormones by the anterior pituitary gland. Thus, normal activity of the gonads can be interrupted by reduced gonadotrophin secretion but may also be altered by abnormal gonadal responses to gonadotrophins as well as by the interaction of other nongonadal endocrine abnormalities on the hypothalamic-pituitary-gonadal axis. [4]

The aims of this study were to identify the seminal fluid patterns in Iraqi men with infertility as well as in fertile controls. Also, to demonstrate the types of serum hormones (Follice Stimulating Hormone (FSH), Leutinizing (LH), Testosternoe and Prolactin) abnormalities in the study groups.

Materials and Method

The study plan and protocol were officially approved by the Iraqi Ministry of Health. The study was conducted during the period from November - April 2009 at Babylon Hospital for Maternity and Childhood in Hilla city, Babylon Province, Iraq.

The study design is a case-control study. The patients were Iraqi male patients with infertility attending Infertility Center at Babylon Hospital for Maternity and Childhood. They were either already diagnosed by a specialist doctor and referred to the center or they were attending the center for the first time. All patients enrolled in the study fulfilled the following criteria; inclusion criteria (1) the patient was unable to achieve pregnancy in the period of last 12 months or more despite regular unprotected properly-timed intercourse, (2) he had abnormal sperms concentration with or without other Seminal Fluid Analysis (SFA) abnormalities, according to WHO guidelines, [5] (3) the wife's infertility evaluation by a specialist gynecologist revealed no abnormalities in the female side and (4) the patient agreed to participate in the study; the exclusion criteria were: (1) history of recent administration of hormonal therapy, (2) patient who cannot provide semen sample (e.g. impotence) and (3) patient with normal semen analysis or with asthenozoospermia plus normal sperm concentration (> 20 million/ml).This is because these patients with normal sperm concentration usually have normal sex hormones levels. [6, 7] The control group consisted of fertile men who achieved pregnancy in the last 24 months and had normal SFA according to WHO criteria. [5] Controls who refused to participate in the study or had history of recurrent abortions in the wife or performed varicocelectomy were excluded.

After obtaining demographic data and type of infertility from each patient and control, SFA was performed for every man according to latest published WHO guidelines in (WHO laboratory manual for the examination of human semen and sperm-cervical mucus interaction) [5] and Nordic Association for Andrology (NAFA) and Eshre-Siga (European Society of Human Reproduction and Embryology, Special Interest Group on Andrology) (Manual on basic semen analysis). [6] All the components of the test were completed by the same researcher to avoid interpersonal variations. The WHO form for SFA was adopted to report the results. All the men were given clear instructions regarding the accurate semen collection to minimize error. They were asked to avoid sexual intercourse for 3 days. The men were given a disposable, sterile, wide-mouth, non-sperm-toxic semen container for semen

collection. They were asked to collect the sample by masturbation without using any lubricants. The samples were examined immediately after delivery to the lab. The SFA parameters that were measured are semen liquefaction, appearance, volume, viscosity, semen PH, sperm motility, agglutination, sperm vitality, sperm concentration, sperm morphology and leukocytes in semen.

The levels of serum (FSH, LH, Testosterone, Prolactin) for male patients with infertility and controls were measured using Enzyme-Linked Immunosorbent Assay (ELIZA) method. The ELIZA kits that were used were manufactured by BioCheck, Inc. company (U.S.A.). We adopted the test procedure and protocol recommended by the kit manufacturer which was given in detail in the kit's insert.

Data analysis was performed using Statistical Package for the Social Sciences (SPSS) software v.12.0 (by SPSS, Inc., Chicago, U.S.A.) and Openstat software (by Miller W.G.).Z-test was applied to determine the statistical significance of the difference between proportions. Whenever Z-test was not applicable for this purpose (because of low frequencies), Fisher Exact Test was used instead. Chi-Square test was utilized to obtain the significance for contingency tables. Analysis of Variance (ANOVA) test was applied to compare the means for multiple groups. [9]

Results

A total number of 119 male patients with infertility fulfilled our inclusion and exclusion criteria were selected; of whom 9 patients with normal SFA and 20 patients with asthenozoospermia plus sperm concentration > 20 million/ml were excluded from the study. The remaining 81 patients had become the patients group in our study. They were divided by their SFA sperm concentration results into the following groups: patients with azoospermia (n= 38), patients with oligoasthenozoospermia (n= 31) and patients with oligozoospermia only (n= 12). 30 fertile men who met the above criteria were selected as a control group for the study. Some of them were the husbands of pregnant women attending Babylon Hospital for Maternity and Childhood for various reasons.

In this study, the mean age was (31.33±6.28), (33.15±5.25) years for patients and controls, respectively. The duration of infertility in patients group was (3.89±2.4) (range 1-10) years. Primary infertility constituted (81.48%), while secondary type formed (18.52 %) (P<0.001) (Table 1).

Table (1): Study groups (male patients with infertility and controls) characteristics.

Character	***Patients***	***Control***
number	*81*	*30*
Age (years) (mean ± SD)	*31.33 ± 6.28*	*33.15 ± 5.25*
Duration of infertility (years) (mean ± SD)	*3.89 ± 2.4 Range(1-10) years*	
Type of infertility: *Primary[No.(%)]* *secondary*	*66 (81.48 %)** *15 (18.52 %)*	

**** P < 0.001***

Regarding the type of SFA abnormalities, the percentages of patients with azoospermia, oligoasthenozoospermia and oligozoospermia were (46.9%, 38.2% and 14.9%), respectively. The propotion of patients with azoospermia was significantly higher than other groups (P<0.01) (Table 2).The means for abstinence time for the 4 groups (patients with azoospermia(G1), oligoasthenozoospermia(G2), oligozoospermia (G3) and controls(G4)) were (3.4±0.84, 3.2±0.78, 2.8±0.78 and 2.3±0.48) days, respectively. The mean for (G4) was significantly lower than the other groups (P<0.05). The groups (G1, G3) are significantly different in means from each other (G1> G3) (P<0.05).The mean time of liquefaction for the 4 groups was (32.75±12.1, 34.16±10.35, 33.24±9.72 and 28±11.63) minutes, respectively. The means of (G2, G4) were different (G2>G4) at (P<0.05).The means of PH values were (8.1±0.55, 7.92±0.42, 8.42±0.61, 8.35±0.52), respectively. The mean values for sample volumes were (1.95±0.74, 2.05±0.68, 2.1±0.52, 2.15±0.63) ml, respectively. The propotions of abnormal semen viscosity in the 4 groups were (26.3%, 34.4 %, 25 % and 6.8%), respectively (Table 3).

Table (2): Frequency distribution of patients with male infertility seminal fluid analysis abnormalities.

SFA abnormalities	***No.***	***(%)***
Azoospermia	*38 **	*46.9*
Oligoasthenozoospermia	*31*	*38.2*
Oligozoospermia	*12*	*14.9*
Total	***81***	***100***

****P value for the difference in the frequencies of the 3 groups is < 0.01***

Table (3): Macroscopic seminal fluid analysis parameters for subgroups of male patients with infertility and controls).

Parameter	***Azoospermia***	***Oligoastheno-zoospermia***	***Oligozoospermia***	***Controls***
Abstinence Time (days)	*3.4±0.84 a (2-4)*	*3.2±0.78 (2-4)*	*2.8±0.78 b (2-4)*	*2.3±0.48 c* (2-3)*
Liquefaction time (min)	*32.75±12.1 (15-60)*	*34.16±10.35 a (15-60)*	*33.24±9.72 (10-55)*	*28±11.63 b (10-45)*
PH	*8.1±0.55 (7-9)*	*7.92±0.42 (7-9)*	*8.42±0.61 (7-9)*	*8.35±0.52 (7-9)*
Volume (ml)	*1.95±0.74 (0.5-2.5)*	*2.05±0.68 (0.5-3.5)*	*2.1±0.52 (1-3.5)*	*2.15±0.63 (1-4)*
Viscosity				
Normal (No.) (%)	*28(73.7%)*	*20 (64.6%)*	*9 (75 %)*	*28(93.34%)*
Abnormal (No.) (%)	*10 (26.3%)*	*11 (34.4 %)*	*3 (25 %)*	*2 (6.8%)*

Results were expressed as means ± SD and (range) unless otherwise mentioned.
Pairs of means with different small letters horizontally have (P <0.05)
**** mean for this group is different from the other means at (P < 0.05)***

The means for sperm concentration were (0±0, 9.03±5.06, 12.41±5.14, 89±26.43) ($\times 10^{6}$ sperm/ml) for the 4 groups, respectively. The means of ((G2, G3) vs. G4) had statistically significant difference ((G2, G3) <G4) (P<0.01). The number of patients with azoosprmia mean for sperm concentration was lower than other subgroups means at (P<0.01). Regarding sperm motility, the means for percentages of (grade a + b) motility in the samples were (0±0, 29.19±11.76, 54.58±3.96, 60.33±6.55), respectively. (G2, G3, G4) have different means (G2<G3<G4) at (P<0.01).The mean of (G1) is different from other means at (P<0.001).The means for the percentages of normal sperm morphology were (0± 0, 32.5± 6.77, 34.5± 6.85, 36.5± 5.79), respectively. The means of (G2, G3, G4) were different (G2<G3<G4) (P<0.05). The mean of (G1) was lower than other means (P<0.001). Regarding the means of sperm vitality, these for the 4 groups were (0± 0, 41.53±10.87, 65.31± 7.18, 73.33± 5.68), respectively (G2, G3, G4) means were different (G2<G3<G4) at (P<0.01).

The mean of (G1) was lower than the other means at (P<0.001). The propotions for samples with grade (+) agglutination were (0 %, 6.4%, 8.3%, 3.3%), respectively, grade (++) were (0 %, 6.4, 8.3%, 0%) while those of grade (+++) were (0 %, 3.2%, 0%, 0%), respectively. WBCs in semen means count were (0.87±0.59, 0.88±0.65, 0.64±0.51, 0.41±0.4) ($\times 10^{6}$ cell/ml) respectively for the 4 subgroups. The means of ((G1, G2) vs.G4) have statistically significant difference (G1, G2) <G4) at (P<0.01) (Table 4).

With regard to hormonal ELIZA assays of serum FSH, the means of the 4 subgroups were (22.63± 21.52, 10.41±8.42, 11.22±7.41, 2.81±2.22) (mIU/ml), respectively. The mean for (G1) was significantly higher than other groups (P<0.01).The means of (G3, G4) were statistically different from each other (P<0.01). Serum LH means were (14.84±14.33, 12.04±11.12, 13.55±12.66, 3.80±2.67) (mIU/ml), respectively. The mean for (G4) was lower than the other groups means (P<0.05).The means for

serum testosterone were (2.39±2.34, 4±0.71, 3.8±1.64, 5.1±1.07) (ng/ml), respectively. The mean of (G4) was higher than the mean of the other groups (P<0.05). Finally, the means for serum Prolactin were (7.12±4.34, 7.56±6.15, 9.28±8.97, 4.01±1.83) (ng/ml), respectively The mean of (G4) was higher than the mean of the other groups (P<0.05) (Table 5).

Table (4): Microscopic seminal fluid analysis parameters for subgroups male patients with infertility and controls.

Parameter	Azoospermia	Oligoastheno-zoospermia	Oligozoospermia	Controls
Sperm concentration (*10^6 sperm / ml)	0±0 †	9.03±5.06 A (1-18)	12.41±5.14 A (3-18)	89±26.43B (40-140)
Sperm motility				
(grade a + b) (%)	0±0 **	29.19±11.76 A (10-45 %)	54.58±3.96B (50-60%)	60.33±6.55C (50-80%)
(grade c +d) (%)	0±0 **	67.58±16.32 B (55-90%)	49.16±5.81 C (40-50%)	42.06±8.08 D (20-50%)
Normal sperm morphology (%)	0± 0 **	32.5± 6.77 a (22-40)	34.5± 6.85 (19-43)	36.5± 5.79 b (24-46)
Sperm vitality (%)	0± 0 **	41.53±10.87 A (31-62)	65.31± 7.18 B (53-76)	73.33± 5.68 C (66-84)
Sperm agglutination (No.) (%)				
—	0 (0 %)	26(84%)	10(83.4%)	29(96.7%)
+	0 (0 %)	2(6.4%)	1(8.3%)	1(3.3%)
++	0 (0 %)	2(6.4%)	1(8.3%)	0(%)
+++	0 (0 %)	1(3.2%)	0(0%)	0(%)
WBCs count (*10^6 cell/ml)	0.87±0.59 A (0-1.8)	0.88±0.65 B (0-2)	0.64±0.51 (0-1.4)	0.41±0.4C (0-1.2)

Results were expressed as means ± SD and (range) unless otherwise mentioned.
Pairs of means with different capital letters horizontally have (P <0.01)
† mean for this group is different from other means at (P < 0.01)
***** mean for this group is different from the other means at (P < 0.001)***

Table (5): Serum hormone levels in subgroups of male patients with infertility and controls by serum hormonal levels.

Serum hormones	*Azoospermia*	*Oligoastheno-zoospermia*	*Oligozoospermia*	*Controls*
S.FSH (mIU/ml)	*22.63±21.52†*	*10.41±8.42*	*11.22±7.41a*	*2.81±2.22b*
S.LH (mIU/ml)	*14.84±14.33*	*12.04±11.12*	*13.55±12.66*	*3.80±2.67**
S. Testosterone (ng/ml)	*2.39±2.34**	*4±0.71*	*3.8±1.64*	*5.1±1.07**
S. Prolactin (ng/ml)	*7.12±4.34*	*7.56±6.15*	*9.28±8.97*	*4.01±1.83**

Results were expressed as means ± SD
† mean for this group is different from the other means at (P < 0.01)
***** mean for this group is different from the other means at (P < 0.05)***

Discussion

The chance of a normal couple conceiving is estimated to be 20% to 25% per month, 75% by 6 months, and 90% by 1 year. [10] Male infertility is defined as the failure to conceive after 1 year of regular, unprotected intercourse. Approximately, 10–17% of all couples experience primary or secondary subfertility at some time during their reproductive life. [11-15] Understanding the main determinants of male fertility would allow us to advance our knowledge of male reproductive function and lifetime reproductive strategies, and also to design appropriate tests to evaluate males and semen samples collected from them. Table (6) shows the reference values for SFA as mentioned in the WHO manual. [5]

Table (6): Reference values of seminal fluid analysis. [5]

Volume	*2.0 ml or more*
PH	*7.2 or more*
Sperm concentration	*20*106 spermatozoa / ml or more*
Total sperm number	*40*106 spermatozoa per ejaculate or more*
Motility	*50% or more motile (grade a+b) or 25 % or more with progressive motility (grade a) within 60 minutes of ejaculation*
Morphology	*
Vitality	*50% or more livei.e., excluding dye*
White blood cells	*Fewer than 1 *106 /ml*

****Data from assisted reproductive technology programs suggest 15% or more should be in normal forms.***

In this study, the mean age of patients and control was (31.33 ± 6.28, 33.15 ± 5.25) years, respectively. Fekri et al. conducted a study on 2940 infertile men in Tunisia and the mean age was (36) years. [16] Our results are also in agreement with Trummer and Habermann who found that the mean age for infertile men in their study was (33.4 ± 6.4) years. [17] Geidmam and Yawe found that among subfertile men the age group (25- 40 years) constituted (76%) of sample. [18] All that refer to that infertile men seeking medical help are usually of young age groups. This is probably expected because of the great concern about having a child before the fertility potential of both partners will decline with advanced age. The duration of infertility ranged from (1-10) years. This variation may be due to the fact that some patients consult a specialist less frequently than others or their infertility problem is long lasting either because of non-compliance to the therapy or the exact diagnosis for their cause of infertility had not been reached. Regarding the type of infertility, primary infertility constituted (81.48 %) while secondary infertility formed (18.52 %). Our findings are in consistence with those of Geidmam and Yawe who found the percentage of primary and secondary infertility were (70.8 % and 29.2 %), respectively. [18] The primary infertility was higher than those with secondary type and this is probably due to that many causes of the secondary type are correctable or probably that patients with secondary type are in less urge for seeking medical help since they already got children.

According to the distribution of patients by their sperm concentration, those with azoospermia, oligoasthenozoospermia and oligozoospermia constituted (46.9%, 38.2% and 14.9 %), respectively. The propotion of patients with azoospermia was significantly higher than other groups. Our findings are in contrast with the findings of Trummer and Habermann who found that the percentages were (9.1%, 68% and 10.2%), respectively. [17] A probable cause that explains the high propotion in our sample is that many cases are caused by primary testicular failure and treatment options other than Assisted Reproductive Techniques (ART), which are less helpful in making their infertility problem remain unresolved. The means for abstinence time in our study for the 4 groups, azoospermia group (G1), oligoasthenozoospermia (G2), oligozoospermia (G3) and controls (G4) were (3.4±0.84, 3.2±0.78, 2.8±0.78 and 2.3±0.48) days, respectively with a range of (2-4) days. This is in contrary to the findings of Fekri et al. who found the range to be (1-8) days. [16] This means that our patients were more compliant to the instructions given for proper semen collection. The abstinence of 2-3 days is ideal and standardization for all patients is important although the range of (2-7) days is accepted according to WHO manual. [5]. Liquefaction time means were (32.75±12.1, 34.16±10.35, 33.24±9.72 and 28±11.63) minutes, respectively. Trummer and Habermann found that the mean of liquefaction time among infertilie men was (36±1.8) minutes [(17)].The liquefaction time was significantly higher in patients with oligoasthenozoospermia than controls. PH means for the 4 groups were (8.1±0.55, 7.92±0.42, 8.42±0.61, 8.35±0.52), respectively. The vast majority of our patients as

well as controls had normal semen PH. This indicates that PH abnormality is not an important contributing factor for men infertility in our sample. These results support the results of Haugen who found that the mean PH among infertile men was (8.4±0.4). [19] With regard to ejaculate volume, the means of volume for the 4 groups were (1.95±0.74, 2.05±0.68, 2.1± 0.52, 2.15± 0.63) ml, respectively. Some patients showed below normal volumes (<2ml). However, there was no significant difference among the 4 groups. Our results agree with those of Fekri et al., Portuondo and Calabozo, Ombelet and Bosmans, Chia and Tay, Zinaman and Brown who found the means of ejaculate volumes among infertile men to be (3.3±1.6, 3.59± 1.44, 3.1, 3.6± 1.8, 2.36± 1.34, 2.5± 0.9) ml, respectively. [16, 20-23]. Also, our results are in consistence with the findings of Portuondo and Calabozo, Ombelet and Bosmans and Zinamann and Brown who found the means of ejaculate volumes among fertile men to be (3.19±1.4, 3.2,2.9±1.1) ml, respectively. [20, 21, 23] We found no significant difference in the propotions of abnormal viscosity in the 4 groups.

Regarding sperm concentration, apart from patients with azoospermia who already had zero sperm concentration, both patients with oligoasthenozoospermia and oligozoospermia had significantly lower sperm concentration than controls. These findings are in agreement with the findings of Portuondo and Calabozo, Ayala, Ombelet and Bosmans, Menkveld et al., Zinaman and Brown, Athayde et al. and Guzick et al. who found that infertile men in their studies had lower sperm concentration than that of fertile men. [20, 21, 23- 27] The means of concentrations in fertile and infertile men in these studies were ([47.7±33.43, 15.76± 10.66], [61.45, 41.23], [53.1, 32.9], [81.07± 49.7, 18.97±26.5], [67.2± 47.8, 59.5± 53.7], [89.1± 52.14, 29± 17.78] and [<48,<13.5]) ($\times 10^6$ million/ml), respectively. It is obvious that our patients had lower means for sperm concentration than other infertile men in other studies. The cause for that may be multifactorial. Grade (a+b) sperm motility percentages was lower in patients with oligoasthenozoospermia than in those with oligozoospermia and both were lower than in controls. Our results are in consistence with those of Portuondo and Calabozo, Ayala, Menkveld et al., Zinaman and Brown, Athayde et al. and Guzick et al. who showed that fertile men had better percentages of sperm motility than infertile men. [20, 23- 27] The percentages of sperm motility in their fertile and subfertile groups were ([52.58± 16.06, 28.38± 10.83], [61.45, 41.23], [53.4, 45.8], [53.1± 15.9, 31.9± 19.2], [57± 9, 52. 6± 11.2], [68.5± 58.7, 49±35.5] and [> 63, < 32]) (%), respectively. Our findings indicate that asthenospermia can coexist and complicate oligospermia and further reduces fertility potential. The propotions of normal sperm morphology in this study showed that patients with oligoasthenozoospermia had significantly lower values than controls but all the groups, with the exception of azoospermic patients of course, had within normal values (>15%) as mentioned in WHO manual. [5] Our results are consistent with the results of Portuondo and Calabozo, Menkveld et al. and in contrast with those of Ombelet and Bosmans, Zinaman and Brown, Athayde et al. who showed that subfertile men had lower propotions of normal sperm morphology than fertile men and below the (15%) value. [20, 21,23,25,26] Our results demonstrated that sperm morphology abnormalities may be of lower importance than low count or motility as a contributing factor for male infertility in our sample. Regarding sperm vitality, the means of percentages of sperm vitality in patients with oligoasthenozoospermia was significantly lower than in those with oligozoospermia and both in turn were lower than in controls. No significant difference for sperm agglutination was obtained between patients and controls in this study. WBCs count in semen was significantly higher in patients with azoospermia and oligoasthenozoospermia than in controls. This finding is in contrast to the findings of Athayde et al. who found semen WBCs count in fertile versus infertile men to be (0×10^6, 0.4×10^6 cell/ml), respectively, i. e, both were within accepted normal values. [26] On the other hand, our results were consistent with the findings of Trummer and Habermann who showed that the mean of WBCs count in infertile men was (2.7±3.3) ($\times 10^6$ cell/ml). [17] High semen WBCs count in our study groups may indicate the presence of concurrent infection which affects

both sperm motility and vitality. With regard to serum hormonal assays, serum FSH (S.FSH) levels were significantly higher in patients with azoospermia than other patients and then in controls. Also, patients with oligozoospermia had got higher mean level than controls. Geidmam and Yawe found that the mean of S.FSH among infertile men was 20.7 IU/L (note that IU/L and mIU/ml have the same values when converted to each other). [18] Meeker and Bailey found the mean among infertile men to be 9.18 IU/L while Trummer and Habermann showed it to be 7.1±7.9 mIE/ml. [17, 28] Kehinde et al. found that S.FSH mean level among fertile men to be 2.4 mIU/ml. [29] High serum FSH in the presence of low sperm concentration is expected from the feedback mechanism of the hypothalamic-pituitary gonadal axis. No significant difference was found in the mean level of serum LH (S.LH) in the patients subgroups but patients had significantly higher mean level than the controls had. Geidmam and Yawe, Meeker and Bailey, Trummer and Habermann found the mean level of S.LH among infertile men to be (12.8 IU/L, 11.2 IU/L, 4.4±2.8 mIE/L), respectively. [17, 18, 28 ,17] Among fertile males, Kehinde et al. showed that it was 3.6 m IU/L. [29] Serum Testosterone was lower in a statistically significant level than in patients with oligoasthenozoospermia, oligozoospermia and controls. Geidmam and Yawe, Meeker and Bailey, Trummer and Habermann found the mean level of S. Testosterone among infertile men as (1.5 nmol/L, 419 ngldl, 4.2± 2.1 ng/ml), respectively. While Kehinde et al. showed that it was 12.6 nmol/L among fertile men. [17, 18, 28, 29] The low level of serum Testosterone which is accompanying high FSH in azoospermic patients points to the primary testicular failure rather than secondary one as the cause of seminal fluid abnormalities. Finally, the mean of serum Prolactin (S. Prolactin) was higher in patients than in controls but there was no significant difference between the 3 patients subgroups. Geidmam and Yawe, Trummer and Habermann found that the mean level of S. Prolactin among infertile men was (429.8 pmol/L, 13.1± 77 ng /ml), respectively. [17, 18] The mean level among fertile men was 5.7 ng/ml was shown by Kehinde et al. [29]

Conclusions and Recommendations

Seminal fluid abnormalities among Iraqi patients with male infertility are multi-components. Hormonal profiles for these patients do not follow a single pattern. Patients with low sperm concentration and especially those with azoospermia are those that most likely will get benefit from hormonal assays. Serum FSH and Testosterone are the best 2 hormones for initial male infertility evaluation. The WHO method for semen analysis is the most reliable method until now and should be applied in all research centers and labs. Further studies are required on a large scale to establish a database and reference intervals for seminal fluid analysis in fertile men in Iraq and regional countries. Also, further studies are recommended on larger numbers of infertile men and in multiple centers to explore the evidence provided by this paper.

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أنماط متغيرات السائل المنوي والهرمونات للرجال العراقيين المصابين بالعقم

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الملخص

الهدف: كان الهدف من هذه الدراسة الضابطة معرفة أنماط متغيرات السائل المنوي للرجال العراقيين المصابين بالعقم وللمجموعة الضابطة ايضا وكان الهدف الآخر معرفة اضطرابات مستوى الهرمونات ,FSH,LHوهرمون التستوسترون وهرمون البرولاكتين لدى مجاميع الدراسة.

المواد وطرق العمل: شملت الدراسة 81 مريضا مصابا بالعقم الذكري و30 رجلا لايعانون من العقم ممن استوفوا معايير الاختيار وتم إجراء تحليل السائل المنوي لهم حسب معايير منظمة الصحة العالمية .تم تقسيم مجموعة المرضى إلى 3 مجاميع فرعية (مجموعة عدم وجود الحيامن ومجموعة نقص عدد وحركة الحيامن ومجموعة نقص الحيامن).كما تم ايضا إجراء فحوص هرمونية لهرمونات (LH،FSH وهرمون التستوسترون وهرمون البرولاكتين) في مصل الدم لمجموعتي المرضى والمجموعة الضابطة بطريقة (الايزا) (ELIZA) المناعية. تم اجراء مقارنة بين مجموعة المرضى والمجموعة الضابطة حول متغيرات السائل المنوي ومستوى الهرمونات في مصل الدم.

النتائج: اظهر المرضى الذكور العراقيون المصابون بالعقم انخفاضا في مستوى متغيرات السائل المنوي اكثر من المجموعة الضابطة غير المصابة بالعقم وكانت هذه الاختلافات معنوية وكانت هذه التغيرات اكثر وضوحا لدى مجموعة المرضى الذين لديهم انعدام الحيوانات المنوية في السائل المنوي وخصوصا في مستوى الهرمون FSH وهرمون التستوسترون .وقد اظهرت المجاميع الفرعية للمرضى ايضا اختلافات في متغيرات السائل المنوي. وفيما يتعلق بمستوى الهرمون FSH والهرمون LH وهرمون التستوسترون وهرمون البرولاكتين في مصل الدم فقد تم التوصل إلى وجود اختلافات معنوية بين مجموعة المرضى والمجموعة الضابطة وبين المجاميع الفرعية للمرضى المصابين بالعقم الذكري.

الاستنتاج: توجد اختلافات متعددة في متغيرات السائل المنوي ومستوى الهرمونات FSH، LH وهرمون التستوسترون وهرمون البرولاكتين وهي متعددة الانماط.وان مجموعة المرضى الذين لديهم قلة في عدد الحيوانات المنوية وخصوصا الذين تنعدم لديهم الحيوانات المنوية هم الذين يجب عمل التحاليل الهرمونية لهم.واخيرا فان الهرمون FSH وهرمون التستوسترون هما الهرمونان اللذان يجب ان يعملا اولا عند اجراء تقييم اولي لمستوى الهرمونات الجنسية للمرضى الذكور المصابين بالعقم

الكلمات الدالة: العقم عند الرجال، تحليل السائل المنوي، FSH، LH، هرمون التستيرون، هرمون البرولاكتين.