ASSESSMENT OF POST COITAL TEST IN FEMALES WITH UNEXPLAINED INFERTILITY IN BAGHDAD CITY 2018- 2019

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ABSTRACT

About 200 to 300 million of sperms transverse from vagina to the cervix, only few hundreds of them can achieve the oocyte.

The aim is theassessment ofpost coital test in females with unexplained infertility.

In this study, 260 infertile women during 14-16- day of the cycle were considered. The women were subjected to the post-coital test at 2 hours after intercourse. The study was conducted in Baghdad during the period from January – April, 2018-2019.

The study revealed that less than half of females were over 35 years and more than half were educated from urban areas and housewives while half of them had recurrent urinary tract infection, vaginitis, diabetes mellitus and less than that had positive family history, anxiety and hypertension. About interventions, 30% of females had cautery, D&C, IUI and less had IVF. 100% had taken clomiphene drug. The mean of BMI was 32.5±2.5. Ultrasound monitoring was done, there were normal findings with patent tubes except part of cases had picture of polycystic ovarian syndrome and ovarian failure. For post coital test, small percentage was with normal amount and consistency (score 3) and high percentage was with abnormal spinnbarkheit and ferning tests, (mostly score 0 & score1). 75% of cases had acidic vagina with dead non motile sperms while 25% with alkaline vagina with average of 40% progressive active sperms, 30% Moderate progressive Liner motility with highly significance (P value<0.05). For cellularity 70% was less than 6-8/HPF. For sperm activity only 30% were motile sperms. For sperm count (3 days' absence), 30% had mild oligospermia, 20% had moderate oligospermia and 10% had sever oligospermia. Most of females had normal hormonal assay but there was gross deficiency in the level of DHEA and D3 (average mean was 90±5µg/dl, 25±2 IU respectively) with small part of them had elevation in FSH and Testosterone hormones. For dietary pattern, most of females had dairy product, salt, tea with sugar daily, more than half of them had acidic food, fast food, dried food, gas drinking daily while part of them had intake of fruit weekly and vegetables monthly. Half of them were smoking cigarette weekly.

High vaginal acidity, impairment of cervical mucous with deficiency of DHEA and D3 in the females and oligospermia in the males should be considered in case of unexplained infertility.

Keyword: Post coital test, female with unexplained infertility, spermatozoa

INTRODUCTION

Examination of cervical mucus and vaginal pH are necessary during evaluation of infertility, because they response for 5–10% of all infertility cases [1,2] that abnormalities of cervical mucus can cause unexplained infertility[3] When PH of the vagina is less than 6.0, there will be sever reduction in sperm motility. [4] Infections, polycystic ovarian syndrome, interventions (cauterization, D&C) can cause cervical constriction, impair mucus production and reduce mucosal receptivity of cervix [5,6]. There are hormonal fluctuations during the cycle which effect the composition and production of that effect on sperm penetrability [7]. Clomiphene citrate intake and smoking can effect on receptivity of mucus to sperm[8].By sexual excitement, the vagina produces a transudate and lubricates which elevate the vaginal pH to 7.0 within few seconds,[9] spermatozoa are taken by the cervical mucus andleaving behind the plasma[10].Sperm movement is passive due to the coordination of contractions between vagina, cervix, and uterus [11] even are of short duration, they are believed to be the responsible for the sperm progression into female reproductive system[12,13].Motility of most vaginal sperm is diminished within about 30 minutes, and almost all sperm motility has been lost within 2 hours[14]. With polycystic ovary, there is difficulty to produce stretchy watery mucus for sperm penetrability [15]. Clomiphene citrate has anti-estrogenic action with adverse effects on the cervical mucus [16,17]. Even of passive smokers, nicotine can be found in the mucus [18].   Prostaglandins have variation in the cervical mucus during the menstrual cycle, so evaluation of PGE_2 levels in cervical mucus with female has unexplained miscarriages is important[19]. A high intake of vegetables and fruits with drinking a lot of water with decrease intake of acidic food, processed and dairy food, sugar, soda and meat will lead to more alkaline vagina and healthy cervical mucus[20].The post-coital test examines the interaction between sperm and mucus of the cervix that examines sperm survival in cervical mucus migration into the reproductive system. The test is done in 2 days before ovulation and after 2 days of sexual abstinence. The presence of any for-ward motile sperm suggests mucus–sperm interaction and normal cervical mucous[21].During ovulation the estrogen stimulates mucin components by producing of abundant, watery, thin mucus withferning capacity and possesses a high spinnbarkheit[22].

The objectives of the study: Assessment ofpost coital test in females with unexplained infertility.

MATERIALS AND METHODS

Population & Sample size

An interview had done by using convenience non probability sampling.- An interview questionnaire form had been designed by researcher that bases on:1. Demographic characteristics that include age, education, job status.2. history of diseases, family history, smoking status, stress.3. History of operations, infection, medication.**Post Coital Test**

Total 260 infertile women with 14-16 day of cycle were considered. The women were subjected to the Sims-Hunter post-coital test at 2 hours after intercourse. During the ovulatory period. Each couple was instructed to abstain from sexual intercourse for 3 days prior to the test. Several hours later (usually 2), the woman was examined by us, the mucus was aspirated from cervical canal and spread on a glass slide. Cervical mucus was examined for amount, consistency,spinnbarkheit, ferning, cellularity, pH, and the post-coital status of the spermatozoa that (10-50) motile sperms/HPF are considered normal. [23]This study was done in Baghdad during the period from January – April, 2018-2019.

Scores :0123

Amount:0ml1ml2 ml3 ml

Consistency:Thick mucusmoderate M.thin M.watery M.

Spinnbarkheit:Less than 11-4 cm5-8 cmmore than 9cm

Ferning:No crystalsA typical C1-2 stem3-4 stem

Cellularity: more than 11 /HPF6-8 / HPF1-5 /HPF0 cell(24)

For sperm count

Mild oligospermia: concentrations 10 million – 15 million sperm/mlModerate oligospermia: concentrations 5 million – 10 million sperm/mlSevere oligospermia: concentrations less than 5 million sperm/ml [25].

Body Mass Index

A tape measure and a weighing scale used to estimate the height and weight and calculated the BMI for each female according to the formula: BMI = Weight / Height² (Kg/m²). BMI ranges as the following: underweight < 18.5 kg/m²,normal weight:18.5-25, overweight:25-30, obese >30. (26) WHO cut-off point for overweight is 25 kg/m²[26].

Statistical Applications

Statistical testswere applied by using SPSS Version 22 that measured mean, standard deviation, ×². Confidence Level was 95%.

RESULTS

Table 1 showsthe distribution according to socio demographic characteristics,showed that 65% werebetween age 18-35 years, 35% were over 35 years, 65% were educated and housewives. 69% was from urban areas.

Table 1: Distribution of patients according to socio demographic characteristics

Characteristics	Groups	No. (total=260)	%
1.Age	<35years>35 years	17090	6535

2.Education	Non educatedEducated	90170	3565
3.residence	Urbanrural	18080	6931
4.Occupation	WorkHousewife	90170	3565

Table (2)shows The distribution of risk factors and diseasesshowed that 50%of females had recurrent urinary tract infection, vaginitis and diabetes mellitus, 30%hadhypertensive, Family history and anxiety.20% had normal and overweight while 60% had obesity.

Table 2: Distribution of risk factors and diseases

Risk factorsand diseases	Groups	No.(total=260)	Percentage
1. Hypertension	PresentAbcent	78182	3070
2. Diabetes Miletus	PresentAbcent	130130	5050
3. Family history	PresentAbcent	78182	3070
5.Anxiaty	PresentAbcent	78182	3070
6. Urinary tract infection	PresentAbcent	130130	5050
7. vaginitis	PresentAbcent	130130	5050
6. Bodymass index	Normaloverweightobesity	5252156	202060

Table (3)showsdistribution of clinical characteristics showed that 70% had infertility for more than 5 years and age of menarche $\geq$ 12 years, 20% had polycystic ovary and ovarian failure, 30% had D&C, cautery, IUI and 20% had IVF.

Table 3: Distribution of clinical characteristics

1.Infertility	1-5 years>5years	78182	30%70%
2.Age of menarche	<12 years$\geq$ 12 years	78182	30%80%
5. Polycysticovarian syndrome	PresentAbsent	52208	20%80%

6. Ovarian failure	PresentAbsent	52208	20%80%
7. D&C	PresentAbsent	78182	30%70%
8. Cautery	PresentAbsent	78182	30%70%
9.IUI	PresentAbsent	78182	30%70%
10. IVF	PresentAbsent	52208	20%80%

Table (3) reveals the observed frequencies and percentage of the clinical characteristics for the studied infertile women including: duration of infertility, age at menarche, body mass index (BMI), polycystic ovarian disease,

Table (4) shows distributionof patients according to post coital test,for amount, 10% was0ml (score 0),30% was1ml(score1),40% was2ml(score 2), 20% was3ml(score 3), for consistency, 60% was thickmucus (score0), 20% was moderate and thin mucus (score1,2). Forspinnbarkeit, 20% was<1cm (score0), 60%was 1-4 cm(score1), 20%was 5-8cm(score2). For ferning test, 20% was 3-4 stem (score3),40%was atypical and non-crystals(score0,1). For cellularity 30%was > than 11/HPF (score0), 40% was 6-8/HPF (score1), 30% was 1-5/HPF (score2). For pH 77% was acidic with 100% dead sperms, 23% was alkaline with average of 40% active sperms,30% moderate active,20% non- forward and non-active respectively.For sperm motility, 70% was<10/HPF, 20% was 10-50/HPF and 10% was >50/HPF.

Table 4: Distribution of patients according to post coital test

post coital test	Scores							
	0		1		2		3	
Amount	0ml		1ml		2ml		3ml	
	26	10%	78	30%	104	40%	52	20%
Consistency	Thickmucous		Moderate mucous		Thin mucous			
	156	60%	52	20%	52	20%	------	
Spinnbarkheit	<1 cm		1-4 cm		>5 cm			
	52	20%	156	60%	52	20%	------	
Ferning test	Normal		No crystals		Atypical			
	52	20%	104	40%	104	40%	------	

Cellularity	more than 11 /HPF		(6-8) / HPF		(1-5) /HPF			
	78	30%	104	40%	78	30%	------	------
PH	Acidic				Alkaline			
	200		77%		60		23%	
No. of motile sperms	<10/HPF		10-50/HPF		>50/HPF			
	172		70%	52	20%	26	10%	

Table 5: Association between vaginal acidity and spermatozoa

Sperm Activity	PH		Total
	Acidic	Alkaline	
Progressive rapid	Zero	30	30
Moderate prog. Liner motility	Zero	20	20
Non motile	196	14	210
Total	196	64	260

x^2 =189.7highly significance

Table (6)showsthedistribution sperm count after 2 hours of intercourse (3 days' absence) showed that40% had normal sperm, 30% had mild oligospermia,20% had moderate oligospermia, 10%, had sever oligospermia.

Table 6:Distribution sperm count

Sperm count	No.	%
>15 million	104	40%
10-15 million	78	30%
5-10 million	52	20%
<5 million	26	10%
Total	260	100%

Table (7)showsdistribution of hormonal analysis showed that 20% increase of FSH (picture of ovarian failure) andTestosterone (poly ovarian syndrome) with average mean 15±2.5, 0.9±0.82 respectively.There was normal level of LH, TSH and prolactin with mean average 12±2.8, 0.7±0.42, 1.7±0.92, 17.4±4.4respectively. 80% had decreased DHEA and D3with mean average 90±5, 25±2 respectively.

Table 7: Distribution of hormonal assay

Hormones	Mean	SD	Average	No.%	
FSH	15	2.5	NormalIncrease	20852	80%20%
LH	12	2.8	Normal	260	100%
Testosterone	0.9	0.82	Normal Increase	20852	80%20%
TSH	1.7	0.92	Normal	260	100%
Prolactin	17.4	4.4	Normal	260	100%
DHEA	90	5	Normal Decrease	52208	20%80%
D3	25	2	Normal Decrease	52208	20%80%

Figure (1) shows the distribution of dietary pattern showed that 100% of female had dairy product, salt and tea with sugar daily, 60% had acidic food, fast food, dried food, gas drinking daily, 20% weekly and monthly, 20% had fruit with vegetables daily and weekly while 60% had vegetables monthly. About 50% of female smoking cigarette weekly.
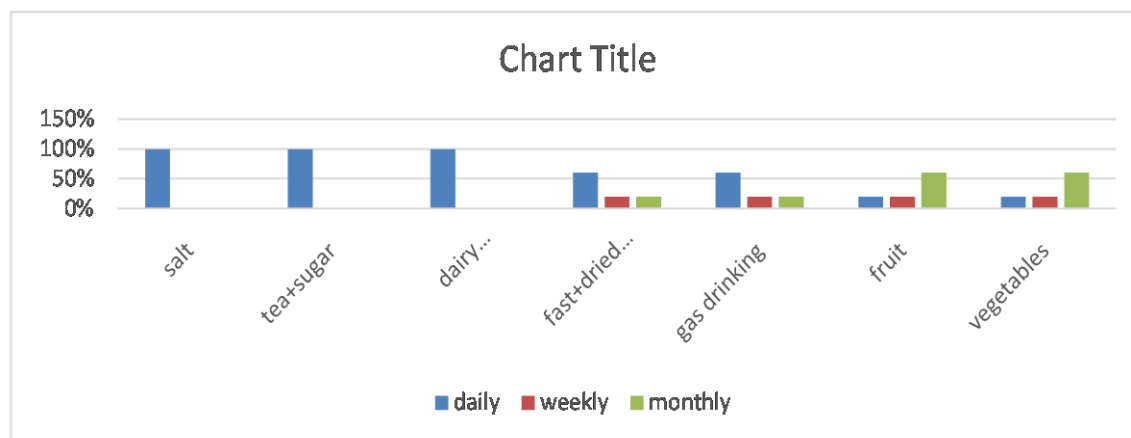

Figure1: Distribution of dietary pattern

DISCUSSION

The study revealed that less than half of infertile females wereover 35 years. Infertility increases with aging[27].More than half of them were educated, from urban areas, housewives,this was agreeing with another study showed that the mostof the females were housewives and from urban areas (81.18%) [28]while was disagreeing with another study in Alexandria City showedthat(42.4%) of them were workers, (31.4%)

from urban areas, this might be due to the variations in the community[29].Half of femaleshad recurrent urinary tract infection and vaginitis,the same picture was found in a study showed that (50%), (56.82%)of females had vaginitis and UTI respectivelywith a tenfold risk of tubal infertility.[28]The mean of BMI was 32.5±2.5,this was agreeing with other study showed that most of the females were overweight (40.91%) and obese (22.73%) [28].Most of females had normal hormonal assay with small part of them had increased FSH and Testosterone levels in bloodwith gross deficiency in vitamin D3 and DHEAwhichwas agreeingwith results of a study showed that themost of females had normal hormonal assay(3.31% had abnormal assay)[30].Studies found that when the level of D3 in the blood ≥30 ng/ml, there weregood results inpregnancy, andthrough IVF,there were four times more likely to get pregnant than who had D3<30 ng/ml [31].DHEA acts as a agonist to activate of the estrogen β receptors with a maximal response that greater than estradiol and even doubled. As such, it was proposed thatit may be a major endogenous estrogen in the body[32,33].Less than half of females hadpolycystic ovariansyndrome which was associated with insulin resistance and obesity[34]also part of females had cautery and D&C whichmight lead toimpairment of cervical mucus and block the canal [7].There was poorpost coital test that only small percentage was with normal amount and consistency (score3) and high percentage had abnormal spinbarkheit, and ferning(score 0,1)PHof the vagina was acidic which leading tonon- motile anddead spermswithdecreasing ofthe defense mechanism of vagina with statistical significance[35].Same results were conducted in a study showed that there was a significant difference between the high and low pH with respect to and spermatozoa and sperm motility[36].60% of husbands hadlow sperm countwhich is a common finding in infertility[37].Most of females had dairy product, salt, acidic food, tea with sugar daily and more than half of them had gas drinking, fast and candidfood daily, while intake of fruit and vegetables was monthly. Lifestyle factors as intake a lot of fast foods, fried and processed food witha lot of salt, sugars, dairy product,tobacco, and caffeinecan throw off pH balance and affect reproduction. [38]

CONCLUSION

High vaginal acidity, impairment of cervical mucous with deficiency in the level of DHEA and D3 in the female and oligospermia in the male should be considered in case of unexplained infertility.

RECOMMENDATION

Post-coital test should be done in case of female with unexplained infertility especially

ETHICAL CLEARANCE

The Research Ethical Committee at scientific research by ethical approval of both environmental and health and higher education and scientific research ministries in Iraq

CONFLICT OF INTEREST

The authors declare that they have no conflict of interest

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