



CODEN (USA): IAJPBB

ISSN: 2349-7750

**INDO AMERICAN JOURNAL OF
PHARMACEUTICAL SCIENCES**Available online at: <http://www.iajps.com>**Research Article****EFFECT ANTI-SPERM ANTIBODY TYPE (IGG&IGA) ON
THE MACROSCOPIC AND MICROSCOPIC SPERM
EXAMINATION SPECIMEN FROM INFERTILE PATIENTS****Hassan Ali Al-Saadi¹, Hadi Rasool Hasan AL-Masoodi² and Zainab Hekmat Abed****Kamona³**

¹Department of Clinical Laboratory Sciences/ College of Applied Medical Sciences/ ²Department of Clinical Laboratory Sciences /College of Pharmacy/University of Kerbala, ³ Education Directorate Kerbala/ IRAQ

Abstract:

Male infertility one of the most common health problems with psychological and social effects. This study aims to investigate the effects of the antisperm antibodies(ASA) on the macroscopic and microscopic parameters of seminal fluid in some infertile males. The percent of ASA type G (IgG), and (IgA) were measured on the surface of sperms, macroscopic and microscopic examination of seminal fluid have been measured for infertile patient resorting to Institute of Embryo Research and Infertility Treatment, Al-Nahrain University, and in the laboratories of Al-Hussain Hospital /Kerbala. Throughout period then March to August 2011. (419) seminal fluid specimen are collected from infertile patient and measurement the percentage of (IgG&IgA) antisperm antibody to (38) sperm agglutination specimen from infertile patient and comper with (12) fertile men as control group. The results were showed a significant effect ($P < 0.05$) of IgG and IgA on a liquefaction time, percentage of progressive motility, sperm agglutination, and round cells on compared with control group. These results showed a significant decrease ($P < 0.05$) in the percentage of rapped progressive motility (Grade A) in all groups. A significant increase ($P < 0.05$) in sperm agglutination and round cell in all groups. Positive correlation with sperm agglutination, morphologically abnormal sperm percent and round cells. A significant increase ($P < 0.05$) in liquefaction time in the second and the third group.

Key words: ASA, MAR test, IgA, IgG, seminal fluid

Corresponding author:**Hassan Ali Al-Saadi,**

Clinical Laboratory Sciences,
College of Applied Medical Sciences,
Kerbala University,
Iraq.

QR code



Please cite this article in press as Hassan Ali Al-Saadi , *Effect Anti-Sperm Antibody Type (IGG&IGA) On The Macroscopic And Microscopic Sperm Examination Specimen From Infertile Patients, Indo Am. J. Pharm. Sci, 2016; 3(3).*

INTRODUCTION:

Infertility is defined by the World Health Organization (WHO) as “a disease of the reproductive system defined by the failure to achieve a clinical pregnancy after 12 months or more of regular unprotected sexual intercourse”[1] Male infertility one of the most propagation health problems with psychological and social effects [2]. More male infertility causes belong to spermatogenesis defect, maturation, endocrine disruption, Orchitis, Cryptorchidism, Testis cancer, Prostatitis and other remain unclear [3]. The presence of anti-sperm antibodies (ASA) is a cause of infertility in men and women. Antibodies against sperm can prevent their motion through the female reproductive tract or prevent the process of fertilization [4,5], and they may cause an abortion [6,7] . It has been shown that both males and females can make antibodies that linked with human sperm. In males, ASA can be revealed in seminal plasma and serum, and are also located on the surface of sperm. In females, ASA can be detected in circulating blood, or produced in the cervical mucus [8] . ASA found on the surface of sperm are more significant from that found in serum and seminal plasma [9] .

This study aimed to affirmation effect of IgG and IgA on a liquefaction time, percentage of progressive motility, sperm agglutination in male infertile .

MATERIALS AND METHODS:

This study include collection of semen samples from 419 infertile men (Institute of Embryo

Research and Infertility Treatment, Al-Nahrain University Baghdad/Iraq) in order to do a classification study; and measurement of percentage of IgG, IgA on the surface of sperms for infertile male whose have an agglutinated sperms (38 patients), the sample of study were divided in to three groups: the first group include 15 case with 1-10% ASA, the second group 13 case with 11-20% ASA, the third group 10 case with 21%-more ASA. We also have taken 12 fertile men (they have children) as control in the study to correlate changes in the data studying. Semen samples were collected Randomly, macroscopic and microscopic examination of seminal fluid were measured duo to WHO 2010, and the percent of IgG, IgA on the surface of sperms were measured using Mixed Antiglobulin Reaction(MAR test) which products by FetiPro N.V. Industriepark Noord 32, 8730 Beernem, Belgium.

Bio-Statistical Analysis:

Statistical analysis was performed using SAS by using one way ANOVA. The correlations between the parameters under study. P-value ≤ 0.05 was considered significant.[10].

RESULTS AND CONCLUSION:

Table (1) showed Macroscopic examination in liquefaction time in the second and the third group; and there was no significant difference in the volume and pH in all groups compared with control group.

Table 1: Macroscopic Examination of Semen For Infertile Men with ASA Compared With Control Group (Means \pm S.E).

Macroscopic examination patients	liquefaction time	Volume / ml	pH
control n12=	28.44B 1.55 \pm	3.80A 0.36 \pm	7.47A 0.07 \pm
the first group%10-1 ASA n 15=	32.50B 2.24 \pm	2.45A 0.16 \pm	7.39A 0.05 \pm
the second group%20-11 ASA n 13=	48.00 A 3.91 \pm	2.5A 0.57 \pm	7.45A 0.09 \pm
third group 21%-more ASA n10=	50.60 A 4.49 \pm	3.6A 0.83 \pm	7.62A 0.09 \pm

*Number of patients =50 *Means that have different letters in the same column defer in signification (p < 0.05).

Current results showed a significant positive correlation ($P \leq 0.05$) with the percent of sperm agglutination.

The results of study were showed a significant positive correlation ($P \leq 0.05$) between the percent of IgG and IgA with liquefaction time with correlation factor 0.48, 0.51 respectively as Figure (1). While results showed no significant correlation ($P > 0.05$) between the percent of IgG and IgA with volume and pH.

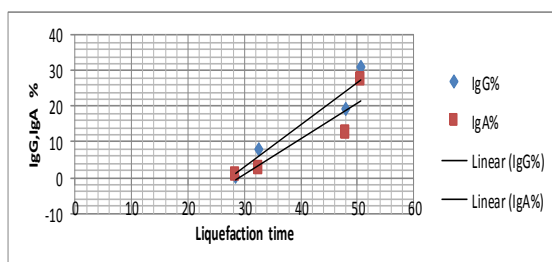


Fig1: Showed a Correlation between The Percent of IgG and IgA with Liquefaction Time of Semen.

This study was showed a significant positive correlation ($P \leq 0.05$) between the percent of IgG and IgA with liquefaction time.

There were proof that sperms can generate an immune response in both men and women that can lead to a contraceptive state [11].

Measurement of microscopic examinations in Table (2) were showed a significant decrease ($P \leq 0.05$) in the percentage of rapped progressive motility (Grade A) in all groups; significant decrease ($P \leq 0.05$) in (Grade B) in a third group; a

significant increase ($P \leq 0.05$) in (Grade C) in second and third group; and a significant increase ($P \leq 0.05$) in (Grade D) in third group only compared with control group.

A significant increase ($P \leq 0.05$) in sperm agglutination and round cell in all groups; significant increase ($P \leq 0.05$) in sperm concentration and abnormal shape in the third group only compared with control group.

The results of study were showed a significant negative correlation ($P \leq 0.05$) between the percent of IgG and IgA with the percent of rapped progressive motility of sperms (Grade A), correlation factor -0.71, -0.65 respectively, as showed in Figure (2); no significant correlation ($P > 0.05$) with the percent progressive motility (Grade B); a significant positive correlation ($P \leq 0.05$) with the percent of Locally motile sperms (Grade C) with correlation factor 0.50, 0.49 respectively; a significant positive correlation ($P \leq 0.05$) with the percent of immotile sperms (Grade D) with correlation factor 0.48, 0.45 respectively.

The presence of anti-sperm antibodies (ASA) were positive in 8% of semen samples (4% IgA, 2% IgG, 2% both IgA and IgG classes [12].

Suggested that the detection of ASAs in semen and sera of patients drop in normal seminal fluid parameters especially the motility and (ASAs) can be considered as a cause of infertility in those patients, while low serum inhibin B in the reminder patients can be considered as a cause of infertility, so inhibin B can be considered as a marker for spermatogenesis [13].

Table 2: Microscopic Examination of Semen for Infertile Men with ASA Compared With Control Group (Means \pm S.E).

Microscopic examination patients	control n12=	the first group 1-10% ASA n15=	the second group 11-20% ASA n13=	The third group 21%-more ASA n10=
rapped progressive motility (Grade A%)	5.33 D 1.45 \pm	11.33C 2.35 \pm	18.30B 1.71 \pm	22.78A 1.42 \pm
Slowly progressive motility (Grade B%)	27.92 B 2.14 \pm	34.66 AB 1.70 \pm	32.90 AB 3.31 \pm	37.17 A 2.16 \pm
Locally motile sperms (Grade C%)	35.72 A 1.82 \pm	29.38 B 2.17 \pm	26.74 B 1.11 \pm	21.67C 1.63 \pm
Immotile (Grade D%)	30.00 A 1.47 \pm	26.03 AB 1.65 \pm	22.20 B 1.04 \pm	18.10B 1.50 \pm
agglutination(%)	27.00 A 1.40 \pm	15.25 B0.71 \pm	6.30 C \pm 0.87	0.22 D 0.11 \pm
Abnormal morphology (%)	35.11 A 3.31 \pm	32.25 AB 4.17 \pm	27.60 BC 3.03 \pm	23.33C 0.91 \pm
round cell count	11.90 A 1.64 \pm	7.75B 1.94 \pm	6.40B 1.51 \pm	2.61C 0.29 \pm
Sperm conc. ($\times 10^6 / ml$)	60.03 B5.54 \pm	68.25 AB 4.59 \pm	68.90 AB 5.70 \pm	74.50 A 3.82 \pm

*Number of patients =50

*Means that have different letters in the same class defer in signification ($p \leq 0.05$).

Our study showed a significant negative correlation ($P \leq 0.05$) between the percent of IgG and IgA with the percent of rapped progressive motility of sperms.

Other studies revealed that serum ASA are considered to be cause of unexplained infertility and unexplained abnormal . Antibodies against sperm prevent their motility through female reproductive tract and obstacle the process of fertilization. Low-dose prednisolone was improved that sperm quality and giving rise to pregnancies is useful in infertility [14].

Serum antisperm antibodies play a role in autoimmune infertility and should be treated [15].

Other study was observed correlation between presence of ASA and altered steroid levels such as

low cortisol, and high progesterone and estradiol in seminal plasma of volunteers with low sperm motility [16].

The results were showed a significant positive correlation ($P \leq 0.05$) with the percent of sperm agglutination with correlation factor 0.75, 0.70 respectively as showed in Figure (3); a significant positive correlation ($P \leq 0.05$) with the percent of round cells with correlation factor 0.44, 0.50 respectively as showed in Figure (4); a significant positive correlation ($P \leq 0.05$) with the percent of abnormal shape with correlation factor 0.40, 0.35 respectively; while results showed no significant correlation ($P > 0.05$) between the percent of IgG and IgA with sperm concentration.

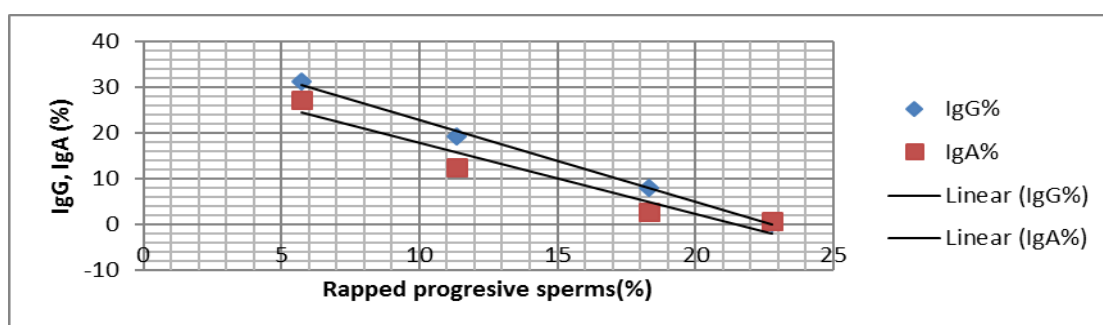


Fig 2: Showed a Correlation between the Percent of IgG and IgA with the Percent of Rapped Progressive Motility of Sperms (Grade A).

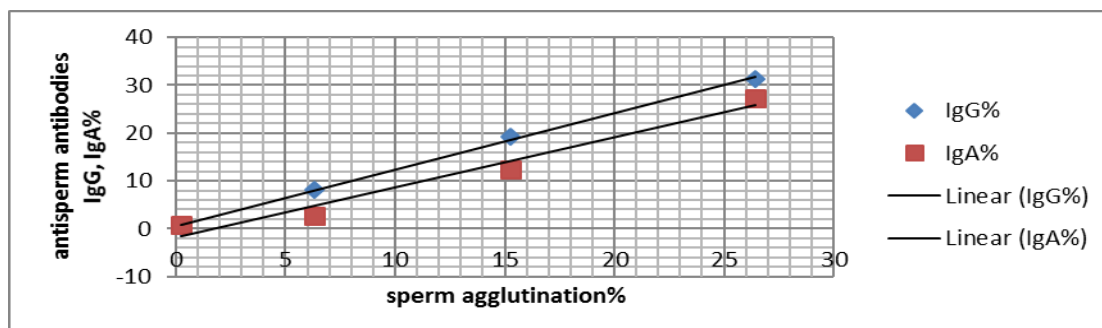


Fig 3: Showed a Correlation between the Percent of Sperm Agglutination with IgG and IgA.

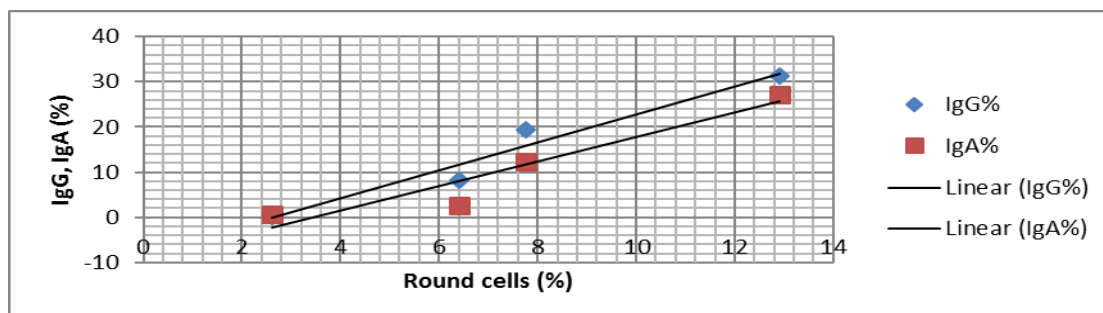


Fig 4: showed A Correlation between the Percent of Round Cells in Semen with IgG and IgA.

ASA may impact pre-fertilization stages of the reproduction process (sperm agglutination and/or immobilization, sperm-oocyte interactions) and they can retard the development of the post-fertilization zygotes [17].

Other results suggested that sperm antigens recognized by the patient's serum anti-sperm antibodies are curbed to the acrosomal region of the plasma membrane. The antibodies may impair fertility by compromising the sperm's ability to afford capacitation and/or acrosome reaction [18].

Measurement of Immunological examinations in Table (3) were showed a significant increase ($P \leq 0.05$) in the percentage of ASAs type IgG and IgA on the surface of sperms for infertile men compared with control group.

Table 3: Immunological Examination of Semen for Infertile Men Compared with Control Group (Means \pm S.E).

Immunological examination / patients	IgG on the surface of sperms(%)	IgA on the surface of sperms(%)
control n12=	0.28 D 0.19 \pm	0.72 C 0.50 \pm
the first group ASA1-10% n 15=	8.87 C 3.71 \pm	3.50 C 1.65 \pm
the second group %20-11 ASA n13=	19.57 B 4.35 \pm	12.40 B 2.97 \pm
third group 21%-more ASA n10=	31.92 A 3.78 \pm	27.25A \pm 4.03

*Number of patients =50

*Means that have different letters in the same column defer in signification ($p \leq 0.05$).

The results were showed a significant positive correlation ($P \leq 0.05$) between the percent of IgG and IgA on the surface of sperms with correlation factor 0.69 as showed in figure (5).

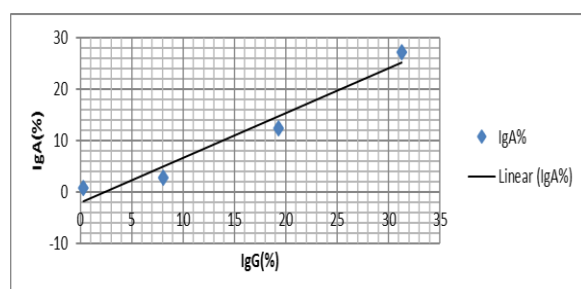


Fig 5: showed A Correlation between the

Percent of IgG and IgA on the Surface of Sperms.

The percentages of different nomenclature of semen variables that include asthenozoospermia, oligozoospermia, teratozoospermia, azoospermia and idiopathic showed that the highest percentage for asthenozoospermia (37.47), then oligozoospermia (31.50), then idiopathic (16.70) then azoospermia (8.35) and teratozoospermia (5.96) as in semen analyses of WHO 2010, the total number of patients were 419 as showed in figure (6).

Suggested that ropporin may be comprised in sperm motility and its decreased expression may contribute to the low sperm motility in asthenozoospermic patients [19].

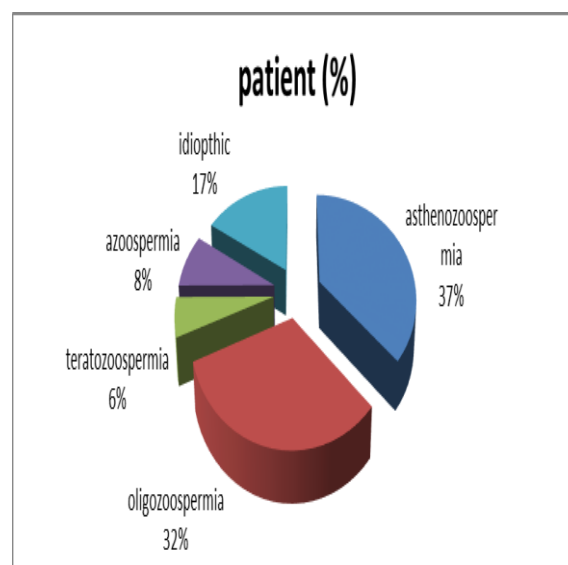


Fig 6: The Percentages of Different Nomenclature of Semen Variables.

The results of agglutinations of sperms were showed that the highest percentage of normal agglutination (less than 10% in field) in idiopathic infertile patient 27.14%, suspected agglutination 15.71%; then asthenozoospermia has normal agglutination 11.46%, suspected agglutination 8.28%; while teratozoospermia has only 8% as normal agglutination; oligozoospermia has normal agglutination 3.03%, suspected agglutination 1.52%, while azoospermia has no sperms then no agglutination, the total number of patients were 419; as showed in figure (7).

The percentages of different nomenclature of semen variables that included asthenozoospermia, oligozoospermia, teratozoospermia, azoospermia and idiopathic showed that the highest percentage for asthenozoospermia.

IgA and IgG an antisperm antibody has an influence on asthenospermia and infertility [20].

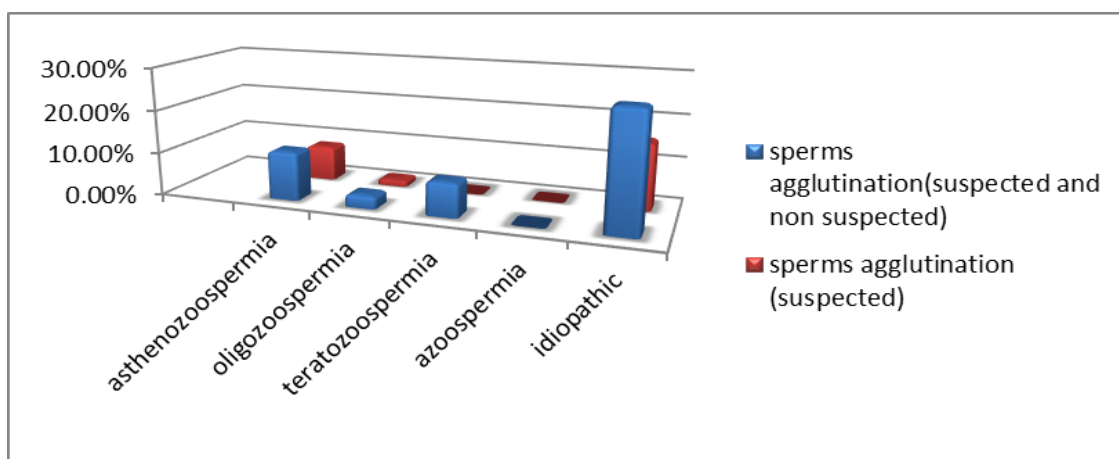


Figure 7: The Percentages of Sperms Agglutination (suspected and non suspected) in Different Nomenclature of Semen Variables.

The results of agglutinations of sperms showed that the highest percentage of normal agglutination (less than 10% in field) in idiopathic infertile patient 27.14%. Overlap between antibodies and some of the sperm membrane antigenic moieties may be regarded as a main reason of immune infertility, because in live sperm cells .

ASA are not able to permeation through the plasmalemma (except from the acrosomal antigens that appear on the sperm surface after the acrosomal reaction). Conversely, the nature of sperm antigens, engaged in immune reactions may be helpful in developing technology for contraceptive vaccination, based on sperm – specific components, for arraying of fertility in humans as well as in experimental animals [17].

These results showed a significant decrease ($P \leq 0.05$) in the percentage of rapped progressive motility (Grade A) in all groups. A significant increase ($P \leq 0.05$) in sperm agglutination and round cell in all groups. Positive correlation with sperm agglutination, morphologically abnormal sperm percent and round cells. The percentages of different nomenclature of semen variables that included asthenozoospermia , oligozoospermia , teratozoospermia , azoospermia and idiopathic showed that the highest percentage for asthenozoospermia . A significant increase ($P \leq 0.05$) in liquefaction time in the second and the third group.

Study the effect of intercourse during the menstrual cycle in the formation of sperm antibodies in female laboratory animals inside the body in vivo; as well as the investigation of this case and its impact on women through the study of A questionnaire.

ACKNOWLEDGEMENTS:

We are greatly appreciated to the medical staffs in Institute of Embryo Research and Infertility Treatment, Al-Nahrain University Baghdad/Iraq,

and in the laboratories of Al-Hussain Hospital /Kerbala/Iraq.

REFERENCES:

- 1.Zegers-Hochschild F, Adamson GD, de Mouzon J, Ishihara O, Mansour R, Nygren Institute of Embryo Research and Infertility Treatment, Al-Nahrain University Reproductive Technology (ICMART) and the World Health Organization (WHO) revised glossary of ART terminology. *Fertil Steril* 2009 ;92(5):1520–1524.
2. Carrell,D.T..2007.The Genetics of Male Infertility.Humana Press .pp:5-15.
- 3.Glover and Barrat,1999. Male Fertility and Infertility,Cambridge University Press ;pp:191-212.
4. Bohring, C.; Klepper, L.and Krause, W. Localization of binding sites of naturally occurring antisperm antibodies on human spermatozoa by immunofluorescence. *J. Andrologia* 2004; 36 (5): 286-290.
5. Hadinedoushan, H. and Ghafourzadeh, M. A survey of anti-sperm antibodies in infertile couples. *Iranian J. of Reprod.. Med.*2007; 5 (1): 39-40.
6. Dhont, D. Recurrent Miscarriage. *J. of Current Women's Health Reports.*2003. 3: 361–366.
7. Risvanli, A.; Bulut, H.; Zonturlu. A-G.; Demiral, O.; Saat, N. and Kilic, A. The role of immunologic factors in abortions observed in sheep and goats. *Intern J. Appl. Res. Vet. Med* 2009;7 (3): 91-96.
8. Feng, H. L.; Han, Y. B.; Sparks, A. E. and Sandlow, J. I. Characterization of Human Sperm Antigens Reacting With Anti-Sperm Antibodies From an Infertile Female Patient's Serum. *J. of Androl.* 2008;29 (4): 440–448.
9. (AUA) American Urological Association and (ASRM) American Society for Reproductive Medicine. Report on evaluation of the infertile male. *J. of Fertil. and Steril* 2006; 86: 202-209.

10. SAS. SAS/STAT 'user'2004. Guide for personal computers. Release .9.1. .SAS Institute Inc., Cary, N. C. ; U.S.A.pp:423.
11. Naz, R. K. Antisperm Immunity for Contraception. *J. of Androl* 2006;27 (2): 55-65.
12. Hadinedoushan, H. and Ghafourzadeh, M. A survey of anti-sperm antibodies in infertile couples. *Iranian J. of Reprod. Med* 2007;5 (1): 39-40.
13. Ruaa E. Shaya Nawfal Y. Al-Dabbagh. Detection of Antisperm Antibodies in Relation to Inhibin B in Infertile Men. *Raf. J. Sci* 2013;24, (3) : 1-16.
14. Nagaria Tripti¹, Patra P.K.², Sahu Jai Prakash³. Evaluation of Serum Antisperm Antibodies in Infertility. *JOGI* 2011; 307-316.
15. Muhammad-Baqir M-R. Fakhrildin Phd , Sundus Fadhil Hantoosh. Detection of Antisperm Antibodies in Sera of Iraqi Males and Females and Their Role in Fertilizing Capacity. *Iraqi J. Med. Sci.* 2009; 7 (3):19-23.
16. Rangari, K. and Shrivastav , T. G. A correlation study between steroid hormone levels and anti-sperm antibodies in serum and seminal plasma of men with or without reduced sperm motility. *J. of Endocrinol Reprod.* 2007;11 (1): 31 – 35.
17. Domagala, A. and Kurpisz, M. Identification of sperm immunoreactive antigens for immunocontraceptive purposes. *Bio Med Central Ltd. Reprod. J. of Bio. and Endocrinol.* 2004;2 (11) : 1-7.
18. H. L. Feng, Y. B. Han, A. E. T. Sparks, and J. I. Sandlow. Characterization of Human Sperm Antigens Reacting With Anti-Sperm Antibodies From an Infertile Female Patient's Serum. *Journal of Andrology* . 2008;29, (4): 440-448
19. Jing Chen, Yong Wang, Benlin Wei, Yongqing Lai, Qiuxia Yan, Yaoting Gui, and Zhiming Cai. Functional Expression of Ropporin in Human Testis and Ejaculated Spermatozoa. *Journal of Andrology.* 2011;32, 1,:26-32.
20. Muhammad A. A. Raad H. N Hussein Q. A. Prevalence of Antisperm Antibodies in Asthenospermic Infertile Male. *Journal of Kirkuk University –Scientific Studies* 2012;7,(1) :1-7.