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The prevalence of circulating Anti- sperm Antibodies in Male serum of infertile couples in Khartoum State Sudan

Mohammed R.K.[1*], Alfadil A.G.[1] and Adris M.A.[2]
[1]Department of Immunology, Faculty of Medical Laboratory Sciences, National Ribat University, University in Omdurman, SUDAN
[2]Department of Biochemistry, Faculty of Medicine and Health Sciences, University of Dongola, SUDAN
maindris71@gmail.com

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Abstract

Anti-sperm antibodies are the one of cause of immunological infertility, as they impair sperm function by binding to the sperm membrane. This objective of the study was to determine the prevalence of anti-sperm antibodies in males of infertile couples in Khartoum State. The study was carried out at (June 2012 to April 2013) to determine the prevalence of anti-sperm antibodies in males of infertile couples suffering from primary and secondary infertility attended to Reproductive Health Care Centre in Khartoum State. The total numbers of study group were (86) couples, their ages ranged (15-55) years with the main ages group were (35) years. Blood samples were collected from males to examine the present of anti-sperm antibodies in male of infertile couples. Serum levels of anti-sperm antibodies quantitavely were measured using (ELISA) kits. The presence anti-sperm antibodies were low among infertile males. The results test revealed that (3) subjects with percentage (3.5%) serum samples of infertile males were positive for anti-sperm antibodies, while (83) subjects with percentage (96.5%) were negative for the presence of anti-sperm antibodies. Negative values were recorded if the value of test was < 60 RU/ml. We concluded that Sudanese infertile males have low serum level of (ASA) that may be the reason of infertility among infertile couple due insignificant. The serum (ASA) is more common observed in male with higher viscosity and agglutinated semen fluid in physical examination, among population of the study. Also it found that no relations between microscopically examination and presence of (ASA) in infertile male.

Keywords: Infertility and anti-sperm.

Introduction

Infertility is a major health disorder which causes intense mental agony and trauma that can only be best described by the infertile couples. It affects approximately (15%) of couples of reproductive age globally[1]. A male related factor is solely responsible about (50%) cases of infertility[2]. The causes of male infertility may be due to various reasons and their management. The treatment depends on proper diagnosis. Infertility may also refer to the state of woman who is unable to carry pregnancy to full term. And it is classified into primary and secondary infertility. Primary infertility describes couples who have never been able to become pregnant after at least one year of unprotected sex intercourse. Secondary infertility describes couples who have been pregnant at least once, but have not been able to become pregnant again. The WHO defines infertility is the inability to conceive a child. A couple may be considered infertile if, after two years of regular sexual intercourse, without contraception, the woman has not become, pregnant and there is no other reason[3]. Infertility affects (10-15%) of couples. Many people may be infertile during their reproductive years. They may be unaware of this infertility. Many parameters are out lined for the cause of infertility like age, life style, and physical problems. Prevalence of infertility varies depending on the definition on the time span involved in the failure to conceive[4]. Autoimmunity to sperm may occur because sperm cell antigens are first expressed during sexual maturation, long after the prenatal period when immunological self-tolerance is induced[5,6]. Generally, humoral immune response such as anti-sperm antibodies (ASA) formation can be induced primarily during infectious and noninfectious inflammations, or by obstruction of testicular efferent duct[5,7]. The ASA was also induced after accidental and/or surgical injury of testicles exposure to very low temperature[8,7]. Subsequently, infertility can result from antibodies directly binding the sperm, or from spermatogenesis due to allergic orchids. Similar phenomenon occurs in vasectomized laboratory rodents and man[8]. Most affected individuals develop epididymal sperm granulomas and testicular degeneration associated with the formation of anti-sperm antibodies[8,9]. Finally, the presence of ASA reacting with antigens on the sperm considered typical and specific immunological infertility[10]. Semen can cause an immune system response in either the man's or woman's body. The antibodies can damage or kill sperm. If a high number of sperm antibodies come into contact with a man's sperm, it may be hard for the sperm to fertilize an egg. The couple has a hard time becoming pregnant. This is called immunologic infertility. Antis-perm antibodies were one of the main causes of infertility, and the prevalence is detected in (8% -21%) of infertile males. A remarkable percentage of infertile couples without any strong

etiology for infertility have been shown to possess circulating antibodies capable of agglutinating spermatozoa. These antibodies are found in blood serum, seminal plasma and also in cervical mucus[11].

Material and Methods

Ethical considerations: Ethical approval was obtained from National Ribat University Ethical Committee. Consents were obtained from participants. Males that were found anti-sperm antibodies positive were referred to the Reproductive Health Care Centre.

Study area: This study was done in Reproductive Health Care Centre (RHCC), Khartoum State Sudan.

Sample size: Sixty eight males their ages ranged from (15-55years), and four individual as control group.

Data collection tools: Blood was collected in plain container and stay for two hours in (37°C) water path in order to obtain serum. Tests obtained from previous data from (RHCC). The semen analysis results were taken from record of RHCC.

Collection of blood sample and Biochemical measurement: Four ml of venous blood samples were collected from males (86) and (4) control, samples were taken in plane container without anticoagulant and stay for two hours in (37°C) water path then the serum was obtained. Serum samples were stored in freezing below (-20°C) prior to analysis. (50 µl) of serum sample was required for analysis. Serum levels of anti spermatozoa antibodies quantitatively were measured using indirect ELISA kits (IgG, Ig M, and IgA) from EUROIMMUN Company to detect the concentration of these antibodies.

Statistics analysis: All data were reported as means±SD. Data analysis were performed using Statistical Package for Social Sciences (SPSS) version (16) USA. Statistical significance was considered as ($p < 0.05$).

Results and Discussion

Serum level of anti-spermatoza antibodies quantitively were measured using ELISA test revealed that (3) subjects with percentage (3.5%) serum samples of infertile males were positive for anti-sperm antibodies, while (83) subjects with percentage (96.5%) were negative for the presence of anti-sperm antibodies Table-2. These results mean that there is insignificant correlation between the presence of the anti-sperm antibodies and abnormal serum parameters especially in normal couples and the presences of anti-sperm antibodies in the serum may have even greater importance. This results in agreement of Komori et al., who reported high percentage of (ASA) positive cases (15%) when examined (144) infertile patients [12]. Also agreement with[2]. This study observed low anti-sperm antibodies when compared to Fing, study who reported (8%) of anti-sperm antibodies[13]. Also Reza et al., and Sorene, were found that the main cause of infertility with ASA with percentage (8% and 21%) respectively are considered higher than this study [14,9]. Although there are isolated reports suggesting no relation between the presence of anti-sperm antibodies and infertility[15]. The majority of evidence is that sperm antibodies on the male partners sperm or female partners' serum is linked to higher rate of pregnancy loss. In approaching couples with infertility a higher index of suspicion for antibodies is necessary to avoid misdiagnosis. Amjad H et al ., they were reported that less than 10% infertile patient of all etiologies is positive by circulating ASA, and ASA prevalence probably increases with patient's age, where in our study found that the high percentage of ASA in the age (25-36) years old where decrease with increasing patients age[2] table-1.

Table-1
Age distribution and percentage of infertile Sudanese couples

Age	Female	Percentage	Male	Percentage
(15-25) years	3	29%	25	3%
(26-35) years	31	48%	41	36%
(36-45) years	40	18%	18	47%
(46-55) years	12	2%	2	14%
Total	86	100%	86	100%

Table-2
ELISA results of anti-sperms antibodies (ASA) tes

Anti Sperm Antibodies (ASA)		
Age group	(- ve) Negative	Positive (+ ve)
(15-25) years N=25	25	0
(26-35) years N=41	39	2
(36-45) years N=18	17	1
(46-55) years N=2	2	0
Total N=86	83 (96.5%)	3 (3.5%)

Normal range of ASA: > (60RU/ml) positive and < (60RU/ml) as negative

Conclusion

From the results of this study it is found that Sudanese infertile male has low serum level of ASA that may be the reason of infertility among infertile couple due insignificant (ASA). It's found that no relations between microscopically examination and presence of (ASA) in infertile male.

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