Original Article

The Correlation between Sexual Practices and the Development of Antisperm Antibodies

Reza Salman Yazdi, M.L.D.[1*], Azadeh Akbari Sene, M.D.[2], Zohreh Kohpaee, M.D.[2], Shahrzad Zadehmodaress, M.D.[3], Seyed Jalil Hosseini, M.D.[1,3], Masoumeh Fallahian, M.D., MPH.[4*]

1. Andrology Department, Reproductive Research Center, Royan Institute, ACECR, Tehran Iran
2. Shahid Beheshti Medical University, Tehran, Iran
3. Infertility and Reproductive Health Research Center, Shahid Beheshti Medical University, Tehran, Iran
4. Obstetrics and Gynecology Department, Infertility and Reproductive Health Research Center, Shahid Beheshti University (MC), Tehran, Iran

Abstract

Background: Infertility is one of the most common and important subjects in today's obstetrics and gynecology. Immunological factors such as the presence of antisperm antibodies (ASA) are challenging etiologies for infertility. This study was performed to determine the correlation between the type of sexual practices (oral, anal and vaginal during menstruation) and the ASA levels in semen and in the sexual partners' serum.

Materials and Methods: In this analytic cross sectional study which was performed in Royan Institute between 2005-2007, the type of sexual behaviours was determined in 51 couples with primary or secondary infertility. The ASA level was determined in both sexual partners' blood serum and in the semen, using the Sperm Mar Test kit.

Results: Using statistical analyses, there was no significant difference between the types of sexual practices (anal, oral, vaginal during menstruation) and the prevalence and level of ASA.

Conclusion: Based on the results of this study, the prevalence and level of ASA has no significant correlation with the types of sexual behaviours (anal, oral, vaginal during menstruation).

Keywords: Sperm, Antibodies, Sexual Behaviour, Sexual Practice, Infertility

Introduction

Infertility is one of the most common and important subjects in today's obstetrics and gynecology. Immunological factors, including the presence of antisperm antibodies (ASA), are important subjects in reproductive medicine (1).

Approximately one out of every five couples suffers from infertility. Despite adequate medical evaluations, no specific etiology is found in 15% of couples who are considered as "unexplained infertility". Some documents state that immunological factors are present in this group of infertile couples (2).

In different studies, the prevalence of ASA was reported between 7-15% among infertile men and about 13% among infertile women (3).

Sperm contains foreign antigens because they are not present until after puberty. Sperm production takes place as a developmental sanctum protected from recognition by the blood-testis barrier (BTB). Any factor which breaks this barrier can result in ASA formation. Thus the route of sexual contact might play a role in ASA formation (1).

The precise mechanism for ASA-mediated fertility impairment is unclear. In either the male or female reproductive tract, ASA may have an adverse impact on sperm maturation or its function or on the overall semen quality (4).

The potential mechanisms by which ASA may disrupt fertility are: decrease in sperm concentration, damaged sperm motility, impaired acrosomal reaction and prevention of sperm penetration into the ovum, prevention of sperm cervical mucus penetration, complement-dependent neutrophil-mediated sperm cytotoxicity, impairment of sperm's motility caused by their aggregation, acting as the blocking agents that inhibits the sperm penetration into the zona pellucida, and the deleterious effect on post fertilization early embryo development and implantation (2).

ASA is detected in blood serum, cervical discharge and semen plasma as IgG and IgM (only in serum, or IgA (in cervical mucus and semen plasma).

Production of ASA in women may occur in a va-

Received: 24 Jan 2009, Accepted: 10 Mar 2009
*** Corresponding Addresses:**
Obstetrics and Gynecology Department, Infertility and Reproductive Health Research Center, Shahid Beheshti University (MC), Tehran, Iran
Email: m_fallahian@yahoo.com
P.O.Box: 19395-4644, Andrology Department, Reproductive Research Center, Royan Institute, ACECR, Tehran, Iran
Email: r.salmanyazdi@royaninstitute.org

Royan Institue
International Journal of Fertility and Sterility
Vol 2, No 4, Feb-Mar 2009, Pages: 189-192

riety of ways. Mechanical or chemical disruption of the female genital tract mucosal layer or sperm penetration into the mucosal membrane of non-genital systems may permit ASA formation. Some examples for this are: trauma to vaginal mucosa during intercourse or sperm's entrance into the GI system by oral or anal sexual contacts (2).
Considering the importance of the effect of ASA on infertility, we determined to study the relationship between sexual practices and ASA formation. In this research we examined the effect of different sexual practices on the prevalence of ASA in semen and blood serum. This study is the first study among Iranian infertile couples that considered the correlation between types of sexual behaviors and the prevalence of ASA.

Materials and Methods

The study was approved by the Research Ethics Committee of the Obstetrics and Gynecology Department of Shahid Beheshti Medical University. This analytic cross-sectional study was performed on 51 infertile couples referred to Royan Institute between 2005-2007. At the beginning, 64 couples with primary or secondary infertility were included in the study. Seven couples with a history of varicocele surgery, five couples who used condoms for more than 6 months and one couple for a history of previous testis biopsy were excluded from the study. All couples including in this study provided written informed consent.
First, questionnaires were completed by a laboratory specialist who collected data from the female participants (husbands were also informed). Next venous blood samples of both husband and wife, and the semen sample (by masturbation or coitus) were collected in Royan Institute's laboratory. Samples were examined immediately or at a maximum of one hour, for the presence and titer of ASA.
Semen samples were collected in special plastic containers. All samples were tested by the same kit (SpermMar IgG Test Kit and SperMar IgA Test Kit, FertiPro N.V., Industriepark Noord 32, 8730 Beernem, Belgium) and in the same laboratory.
To determine the ASA level (IgG, IgA); the SpermMar Test was used, which is a qualitative latex test for detection of sperm antibodies. The Direct Sperm Mar Test is performed by mixing fresh, untreated semen with latex particles that have been coated with human IgG. To this mixture, a monospecific anti-human IgG/IgA antiserum is added. The formation of agglutinates between particles and motile spermatozoa indicates the presence of IgG/IgA antibodies on the spermatozoa (5).
In the Indirect Sperm Mar Test, washed motile donor spermatozoa are incubated with diluted decomplemented patient serum of male or female origin. If the serum contains antisperm antibodies, this will cover the donor spermatozoa which will react positively in a subsequent SpermMar Test.
As a result, the absence of sperm antibodies will be shown by freely moving spermatozoa uncovered by latex particles. In the presence of sperm antibodies however, the spermatozoa will be partially or completely covered by latex particles and immobilized by adherent latex particles. The diagnosis of immunological infertility is highly probable if 40% or more of the spermatozoa are covered by latex particles (5).
Data were analyzed statistically using the SPSS software package, Fisher's exact test and chi-square test to compare the quantitative and qualitative data.

Results

The mean age of the participants was 27.6 ± 4.74 (ranging from 20 to 42 years) and the mean infertility duration was 3.5 ± 3.6 years (ranging from 1 to 17 years). Some characteristics of the studied couples are presented in Table 1.

Table 1: Characteristics of the studied couples

Characteristic	Mean	Standard deviation	Minimum	Maximum
Age (year)	27.69	4.739	20	42
Infertility duration (year)	3.61	3.589	1	17
Pregnancy history	0.57	0.985	0	4
History of abortion	0.43	0.878	0	4
History of delivery	0.18	0.518	0	2
Live child	0.10	0.300	0	1
Female serum IgG	0.15	0.171	0	1
Male serum IgG	0.18	0.227	0	1
Semen IgA	0.03	0.080	0	1

The most common type of infertility was male factor infertility (60.8%) (Table 2).
Six couples (11.8%) had anal intercourse, 25 couples (49%) had oral contact and 6 couples (11.7%) had vaginal intercourse during the menstruation period (Table 3).

Table 2: Distribution of the studied couples according to the cause of infertility

Cause of infertility	Number	Percent
Male factor	31	60.8
Tubal factor	2	3.9
Ovulation factor	7	13.7
Unknown factor	3	5.9
Other	8	15.7
Total	51	100

Serum IgG among male partners was positive in two men (33%) who had anal sex or vaginal intercourse during the menstruation period and in 11 men (24%) without such contacts. The difference was not statistically significant (Table 4).
Semen IgA was positive in none of the cases who had anal sex or vaginal intercourse during menstruation, but was positive in one man (2%) without such sexual contacts. The difference was not statistically significant (Table 4).
Serum IgG among female partners was positive in none of the cases who had anal contact. It was positive in 8 women (18%) without this kind of sexual practice and was also positive in one woman (17%) with vaginal intercourse during menstruation and in 7 women (16%) without this kind of sexual contact, which was not statistically significant (Table 4).
25 couples from our 51 studied couples had oral sexual contact. Positive serum IgG was detected in 5 women (20%) with oral contact and in 3 women (11%) without it, which was not statistically significant (Table 4).
Positive serum IgG was also detected in 7 men (28%) with oral sexual contact and in 6 men (23%) without such contact, which was not statistically significant (Table 4).
Positive semen IgA was detected in one man (4%) with oral sexual contact but it was not detected in any cases without such contact, which was not statistically significant (Table 4).

Table 3: Distribution of studied couples according to the type of unusual sexual practice

Sexual practice	Never	Rarely*	Occasionally**	Frequently***	Total
Anal contact	45 (88%)	3 (6%)	3 (6%)	0 (0%)	51 (100%)
Oral contact	26 (51%)	13 (25%)	12 (23%)	0 (0%)	51 (100%)
Vaginal contact during menstruation	45 (88%)	2 (4%)	4 (8%)	0 (0%)	51 (100%)

***rarely: once in several months**
****occasionally: once a month**
*****frequently: twice weekly**

Table 4: Distribution of patients according to the types of sexual practices and the presence of ASA in serum and semen

Types of Sexual Contacts	Presence of Antisperm Antibody					
	Female serum IgG		Male serum IgG		Semen IgA	
Anal contact	-	+	-	+	-	+
Present	6 (100%)	0 (0%)	4 (67%)	2 (33%)	6 (100%)	0 (0%)
Absent	37 (82%)	8 (18%)	34 (76%)	11 (24%)	44 (98%)	1 (2%)
P value	0.572		0.638		1.0	
Oral contact						
Present	20 (80%)	5 (20%)	18 (72%)	7 (28%)	24 (96%)	1 (4%)
Absent	23 (89%)	3 (11%)	20 (77%)	6 (23%)	26 (100%)	0 (0%)
P value	0.465		0.755		0.490	
Vaginal contact during menstruation						
Present	5 (83%)	1 (17%)	4 (67%)	2 (33%)	6 (100%)	0 (0%)
Absent	38 (84%)	7 (16%)	34 (76%)	11 (24%)	44 (98%)	1 (2%)
P value	1.0		0.638		1.0	

Discussion

Regarding a 20% rate of infertility, 15% rate of unexplained infertility and the major role of immunological factors (such as ASA) as important causes of unexplained infertility (2); it is important to identify factors which may produce ASA in order to diagnose and prevent unexplained infertility.

In this study, first the presence of considered sexual behaviours (oral, anal, vaginal during menstruation) were detected among couples with primary or secondary infertility. Then the presence and level of ASA was detected in both the husband and wife's serum and also in semen. Finally no statistically significant correlation was detected between these different sexual practices and ASA level.

The results of this study are similar to the results of Chacho's study which was performed in 1991 in Bridgeport hospital on 39 women. His study titled: "The Relationship Between Female Sexual Practices and the Development of Antisperm Antibodies" found that female sexual practices (oral and anal intercourse) were not related to the development of ASA in serum and cervical mucosa (6).

In another study performed by Mulhall et al., the prevalence and correlation of sexual behaviour and ASA in homosexual men was examined. Among 60 studied men, antisperm IgG was detected in 10% who had unprotected receptive anal intercourse in the previous 6 months, but was not found in homosexuals who were celibate, or who practiced only oral intercourse during the same period (7).

Also it was concluded in Wolff's study that the high incidence of ASA among homosexual men probably was because of the contact of spermatozoa with the immune system by positive anal intercourse (8).

Sands et al. study showed no significant difference for the mean ASA titers between sexually active heterosexual men, women or homosexual men (9).

The presence of ASA in blood serum samples from women having multi-partner sexual contacts was demonstrated in Brokowski's study (10).

In contrast to the previous studies that mostly considered homosexual men or multi- partner women, this study was performed among married couples who had heterosexual and monogamous relationships. The number of our samples was more than the previous studies. No similar study has been performed in Iran.

Considering some cultural limitations; the number of couples who were willing to answer the questions about their personal sex life was limited in the present study. Also in this study the prevalence of couples with considered sexual behaviours was low among all the studied couples. Furthermore all the couples who had such sexual practices, had it occasionally (once a month) or rarely (once in several months), and there were no cases of high frequency sexual contacts (twice weekly). Therefore performing larger studies with more cases of considered sexual practices that also have higher frequency of such sexual practices (which might be the threshold of ASA formation) is recommended.

Conclusion

Based on the results of this study, we found no correlation between the type of sexual practices (vaginal, oral, anal and vaginal during menstruation period) and the presence and titer of ASA. More studies are needed to confirm these results.

Acknowledgements

The authors wish to express their gratitude to all the couples who participated in the study, the staff of Royan Institute Clinical Laboratory, Infertility & Reproductive Health Research Center of Shahid Beheshti University of Medical Sciences (especially Doctor Mohammad Reza Razzaghi for his gracious comments), without whose contribution this work would not have been possible. There was no conflict of interest in this article.

References

1. Spreoff L, Fritz M. Female infertility; In: Speroff clinical gynecologic endocrinology and infertility. Philadelphia: Williams and Wilkins; 2005: 1014-1016.
2. Novak E, Berek JS. Berek and Novak's gynecology; Infertility 14th ed. Philadelphia: Williams and Wilkins; 2007: 1221-1222.
3. Mazudmar S, S. Levin A. Antisperm antibodies: etiology, pathogenesis, diagnosis and treatment. Fertil Steril. 1998; 70(5): 42-48.
4. Dimitrov DJ, Urbanek V, Zeverina J. Correlation of asthenozoospermia with increased anti sperm cell-mediated immunity in men from infertile couples. J Repord Immunol. 1994; 27: 3-12.
5. Stedronska J, Hendry WF. The value of the mixed anti globulin (MAR–TEST) as an addition to routine seminal analysis in the evaluation of the subfertile couple. Am J Repord Immunol. 1983: 89-91.
6. Chacho KJ, Hage CW, Shulan S. The relationship between female sexual practices and the development of anti sperm antibodies. Fertil Steril. 1991; 56: 461-464.
7. Mulhall BP, Fieldhouse S, Clark S, Carter L, Harrison L, Donovan B. Antisperm antibodies in homosexual men; prevalence and correlation with sexual behaviour. Genitourin Med. 1990; 66: 5-7.
8. Wolff H, Schill WB. Antisperm antibodies in infertile and homosexual men; Relationship to serologic and clinical findings. Fertil Steril, 1985; 44: 673-677.
9. Sands M, Phair JP, Hyprikar J, Hansen C, Brown RB. A study on anti sperm antibody in homosexual men. Fertil Steril. 1985; 44: 673-677.
10. Brokowski J. Presence of anti sperm antibodies in blood serum samples from women having multi-partner sexual contacts. Ginekol Pol. 1977; 48(1): 45-49.