SEMINAL ANTISPERM ANTIBODIES AND GENITOURINARY INFECTION

SAVA MIĆIĆ, M.D.
SPOMENKA PETROVIĆ, PH.D.
RAJKO DOTLIĆ, M.D.

From the Urologic Clinic and Institute of Social Medicine and Statistics, Medical Faculty and Institute of Immunology, Belgrade, Yugoslavia

ABSTRACT—A total of 326 infertile men, 126 with genitourinary tract infection, and 200 without infection, were compared with 60 fertile men. Seminal plasma antisperm antibody with other clinical and microbiologic investigations were performed in all. Infertile men with genitourinary tract infection had antisperm antibody in 11.9 percent, infertile men without infection in 14 percent, and fertile men in 5 percent; these differences were not significant. The most common causes of these infections were gram-negative organisms and Chlamydia. Comparison of the levels of the titers of seminal plasma antisperm antibodies showed no significant difference between infertile and fertile men. This study shows no significant relationship between genitourinary tract infection and formation of the seminal antisperm antibody.

Genital infection and sperm antibodies have interested urologists in the field of male infertility. Genitourinary tract infection has been shown to correlate with decreased fertility. It was shown that bacteriospermia had a negative effect on sperm motility and longevity.[1-3] Investigations of the immunoresponse in prostatitis were done, showing that 82 percent of men with chronic prostatitis from strains of Escherichia coli had elevated serum antibodies against the prostatic pathogens. The return to normal of previously elevated serum antibodies in men after cure of chronic prostatitis has been reported.[4,5] That infection of genital organs such as epididymitis and prostatitis can induce autoimmunization against spermatozoa has been suggested previously.[6,7]

The aim of our study was to evaluate the incidence and importance of sperm antibodies in the seminal plasma of infertile men with and without genitourinary tract infection.

Material and Methods

We investigated 326 infertile men of whom 126 had clinical and microbiologically proved genital tract infection and 200 did not. These two groups of infertile men were compared with 60 fertile men without genital infection. Physical examination and palpation of the prostate, urine culture, semen culture, urethral smear, and seminal plasma antibody detection were performed. Seminal plasma antibody was investigated by the gelatin agglutination test (GAT), tray agglutination test (TAT), and sperm immobilization test (SIT). Pyospermia was considered present when there were more than 20 white blood cells per high-power field.

Statistical analysis was done by two-way analysis of variance for nonparametric samples, Student's *t* test and Fisher test.

Results

The most frequent organism found by microbiological investigation were gram-negative bacteria and Chlamydia. There was no significant difference in the number of men with positive antisperm antibodies among infertile men with genitourinary tract infection, infertile men without infection, and fertile men (Table I).

TABLE I. *Incidence of seminal plasma antisperm antibodies among investigated groups*

Group	No.	Men with Antisperm Antibodies GAT No. (%)	TAT No. (%)	SIT No. (%)
Infertile men				
With infection	126	15 (11.9)	15 (11.9)	10 (7.7)
Without infection	200	29 (14.5)	28 (14)	21 (10.5)
Fertile men	60	3 (5)	3 (5)	2 (3)

KEY: GAT = gelatin agglutination test; TAT = tray agglutination test; SIT = sperm immobilization test. Statistical parameters: F = 0.99, P = 0.373 (not significant).

During genital infection extravasation of the spermatozoa, prostatic fluid, seminal plasma into the interstitium, lymph vessels, or blood capillaries of the epididymis with subsequent transfer into regional lymph nodes might initiate sperm antibody formation. The possible presence of occult genital lesion in men with sperm agglutinins has been stressed by Rumke and Hellinga.[8] It was reported that both genital infection and sperm antibodies are not only inter-related but are also associated with decreased fertility in men.[9]

Positive agglutination and immobilization were demonstrated in screened infertile men

TABLE II. *Seminal plasma antibody titer in investigated groups*

Sperm Antibody Techniques	No. Men With ASA	Seminal Plasma ASA Titer 4	8	16	32	64	128
Infertile men without infection							
GAT	29	8	10	6	2	2	1
TAT	28	8	10	5	2	3	0
SIT	21	4	13	2	1	1	0
Infertile men with infection							
GAT	15	4	6	2	3	0	0
TAT	15	3	7	2	2	1	0
SIT	10	3	4	2	0	1	0

KEY: GAT = gelatin agglutination test; TAT = tray agglutination test; SIT = sperm immobilization test; ASA = antisperm antibody. P = 0.35 (not significant).

Percentage of antisperm antibody in infertile men with genital infection, without infection, and fertile men, by each method, were not significantly different (F = 1.09).

Comparison of the level of the titers of seminal plasma antibodies, by each method (GAT, TAT, and SIT), is shown in Table II. Analysis of the distribution of this frequency of antisperm antibody in our investigation showed no significant difference.

Comment

Damage of the important component of the male reproductive tract, the blood-testis barrier that is required for the proper maintenance of spermatogenic process and prevention of passage of serum proteins into the seminiferous tubules, may lead to the loss of tolerance to organ-specific antigens. This damage may be caused by traumatic lesion of the testis, genital infection, and obstruction of the reproductive tract.

from 2 to 22.6 percent.[9-11] Percentage of seminal plasma sperm antibodies in our study in both groups of infertile men is in accordance with reported range.

Higher incidence of prostatitis in men with sperm antibodies than in control group was found, and after the treatment of prostatitis a reduction of antibody titers was observed.[12] Our study shows no significant relationship between genital infection and formation of sperm antibody and is in accordance with previous reported finding that there was no link between sexually transmitted diseases and circulating antibodies and also between seminal plasma mycoplasma and antibodies.[13,14]

Urologic Clinic
Medical Faculty
Gen. Zdanova 51
11000 Belgrade, Yugoslavia
(DR. MIĆIĆ)

References

1. Dahlberg R: Asymptomatic bacteriospermia as a cause of infertility in men, Urology **8:** 563 (1976).
2. Fowkkes DM, MacLeod J, and O'Leary WM: T mycoplasma and human infertility: correlation of infection with alterations in seminal parameters, Fertil Steril **26:** 1212 (1975).
3. Caldamone AA, and Cockett ATK: Infertility and genitourinary infection Urology **12:** 304 (1978).
4. Meares EM Jr: Serum antibody titers in urethritis and chronic bacterial prostatitis, Urology **10:** 305 (1977).
5. Meares EM Jr: Serum antibody titers in treatment with trimethoprim-sulfamethoxazole for chronic prostatitis, Urology **11:** 142 (1978).
6. Bandhauer K: Immunoreaktionen bei Fertilitatsstorungen des Mannes, Urol Int **21:** 247 (1966).
7. Fjällbrandt B, and Obrand O: Clinical and seminal findings in men with sperm antibodies, Acta Obstet Gynecol Scand **47:** 451 (1968).
8. Rümke P, and Hellinga G: Autoantibodies against spermatozoa in sterile men, Am J Clin Pathol **32:** 357 (1959).
9. Quesada EM, Dukes CD, Deen GH, and Franklin R: Genital infection and sperm agglutinating antibodies in infertile men, J Urol **99:** 106 (1968).
10. Hendry WF, *et al:* Steroid treatment of male subfertility caused by anti-sperm antibodies, Lancet **2:** 408 (1981).
11. Mumford DM, and Warner MR: Male fertility and immunity, in Lipshultz LI, and Howards SS (Eds): Infertility in the Male, New York, Churchill Livingstone, 1983, p 275.
12. Fjällbrant BO, and Nilssen S: Decrease of sperm antibody titer in males and conception after treatment of chronic prostatitis, Int J Fertil **22:** 255 (1977).
13. Hargreave TB, Torrance M, Young H, and Harris AB: Isolation of ureaplasma urealiticum from seminal plasma in relation to antisperm antibody levels and sperm motility, Andrologia **14:** 223 (1982).
14. Hargreave TB, Harvey J, Elton RA, and McMillan A: Serum agglutinating and immobilizing sperm antibodies in men attending a sexually transmitted disease clinics, Andrologia **16:** 111 (1984).