

ANTISPERM ANTIBODIES : INCIDENCE IN INDIAN POPULATION

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SUMMARY

Seventy-three infertile couples were investigated for detection of sperm antibodies. Twelve of 73 male patients had significant sperm antibodies in seminal plasma (16.43%), while 11 had sperm antibodies in serum (15.04%). Of these 7 (9.5%) male patients had positive sperm antibodies in serum and seminal plasma. The incidence of sperm antibodies in relation to normal and abnormal spermiogram was 8.8% and 10.7% respectively. In females the incidence of sperm antibodies was 6.8% and 2.7% with negative and positive post-coital test respectively.

Introduction

The association of antispermatozoal antibodies with reduced chance of conception following unprotected intercourse has been well documented and widely accepted. Sperm antibodies primarily act by preventing sperm transport through the female reproductive tract (Menge and Beitner 198a) by trapping or immobilizing the sperms while travelling through the cervical mucus. There is an increase amount of evidence to suggest that these antibodies when present in male partner's semen or serum may affect the fertilization of the oocyte. This is by interfering with gamete interactions involved in fertilization such as inhibition of sperm bind-

ing or penetration to the zona pellucida of the ovum. Similarly the detection of sperm antibodies in serum and cervical secretions of infertile women and their relationship to infertility has been investigated extensively using different techniques (Bronson et al 1984, Jones et al 1973, shawky et al 1984).

Keeping all this study in mind present study was undertaken to determine the incidence of sperm antibodies in involuntarily infertile couples.

Materials and Methods

Seventy three infertile couples were taken up for the study. All were subjected to routine infertility investigations which included seminal analysis, post coital test and basal body temperature. Endocrine evaluation was done in females with ovu-

latory disorders and in males with oligospermia or poor seminogram.

Following criteria were considered for screening of antisperm antibodies

- 1: Couples with unexplained infertility. The total number of couples in this group were 10.
- 2: A poor post coital test where the number of actively motile sperms were less than 5 per high power field. In this group 32 couples were investigated.
- 3: Abnormal seminogram i.e. sperm count less than 20 million/ml with poor motility. In this group 28 couples were investigated.
- 4: A normal sperm count with reduced motility and suspected prostatitis was found in 3 cases.

Ejaculates from 73 male partners were examined and seminal plasma preserved at -20°C till assayed. Serum samples were stores in the similar way.

The presence of sperm antibodies in serum and seminal plasma was examined using the tray agglutination technique (TAT) of Friberg (1977). In this technique serum or seminal plasma samples were serially diluted 2 fold from 1:8 dilution. Five microlitre aliquots of these dilutions were applied on microtray filled with paraffin oil. One microlitre of donor sperm of excellent quality diluted with Hams F10 to 40 million/ml was applied to each 5ul sample. Microtray with known positive and negative controls was incubated at 37°C for 2 hours. Positive samples on the screening tests were further diluted to establish the sperm antibody titre. A sample was considered to contain sperm antibodies only if agglutination was observed after atleast two dilutions. Thus

the borderline titre of sperm agglutinating titre reported was 1:16. The types of agglutination most commonly found were H-H, T-T and mixed type.

Results

Table 1 shows the presence of sperm antibodies in male and female patients. Of 73 male patients, 12(16.43%) had significant titre of sperm antibodies in seminal plasma and 11(15.06%) in serum. Of these only 7 (9.5%) had positive sperm antibodies in serum and seminal plasma.

TABLE 1
INCIDENCE OF ANTISPERM ANTIBODIES
IN MALE AND FEMALE PATIENTS (N=73)

	Serum	Seminal Plasma	Titre
Male	11(15.06%)	12(16.43%)	1:32 - 1:256
Female	7(9.5%)	-	1:32 - 1:256

The incidence of positive sperm antibody results in 8.8% and 10.7% for male with normal and abnormal semen picture respectively.

The incidence of serum sperm antibodies in females was 9.5%(7/73). Of these 5(6.8%) had negative PCT while 2 had positive PCT.

Of 3 couples with male infertility due to poor motility and suspected infection, a significant titre of IgG(Chlamydia T) was detected in one.

Discussion

The microagglutination technique used in present study to demonstrate the presence of sperm antibodies requires motile sperms of good quality. However this method has several advantages over the Kibrick method (1952) and techniques. (Franklin & Dukes 1964). In the former one the type of agglutination cannot be

detected and in the later one titration of semen is difficult.

In TAT method titration is simple and evaluation of the type of sperm agglutination is easy. In addition degree of agglutination can be evaluated and one single ejaculate can be used to test many dilutions. This makes the comparison among different serum or seminal fluid samples more accurately. For this reason sperm microagglutination technique has been used in the present study.

The incidence of sperm antibodies found in present study was same in male and female patients (Table 2). This is in accordance with other investigators (Jones et al 1973, kibrick et al 1952, Husted 1975). The incidence of sperm antibodies in serum of male and female patients has been reported to be of 19.0% and 20.4% respectively (A. Menge and O. Beitner 1989). Though this value may be somewhat inflated as some couples were referred for analysis based on poor PCT. Shawky et al (1984) have reported more prevalent sperm antibodies in infertile women than men.

TABLE 2

INCIDENCE OF SPERM ANTIBODIES IN SERUM AND SEMINAL PLASMA OF MALE PATIENTS WITH NORMAL AND ABNORMAL SEMEN PICTURE

Sperm antibody	Normal semen count	Abnormal semen count
Positive	4(8.8%)	3(10.7%)
Negative	41	25
Total	45	28

When the incidence of sperm antibodies was examined in relation to the quality of semen slightly higher but statistically less significant occurrence of sperm

antibodies was found in oligospermic males compared to normospermic. Hendry (1979) has reported that one third of patients with sperm antibodies have oligospermia while others could not find the same (Shawky et al 1984). Present study provides the strong evidence in support of the assumption that the presence of sperm antibodies does not affect the spermatogenesis as the frequency and titre of sperm picture. A reduced fertilization rate in normospermic male could be due to the presence of sperm antibodies of IgG and IgA class in seminal plasma (Stephen et al 1986).

Thus the presence of sperm antibodies in seminal plasma must be of decisive importance for the fertility inhibiting effect.

The presence of sperm antibodies in female patients with negative or poor PCT was more prevalent (6.8%) than females with normal PCT (2.7%). This suggests that poor or negative PCT is a good index to study the possible presence of sperm antibodies in female sera. A reduced fertilization in IVF-ET has been observed by Stacey et al (1987) in females with positive sperm antibodies in their sera and follicular fluid.

Two couples with no demonstrable cause of infertility had positive sperm antibodies in their sera. Though we have not followed up these patients it is likely that the presence of sperm antibodies is interfering with sperm oocyte interaction. This means that couples with unexplained infertility must be investigated for sperm antibodies. The factors leading to derangement of sperm mucus interactions are to be corrected first and perhaps this might lead to a pregnancy before ordering specific antibody test.

From this study we conclude that all infertile couples with poor spermogram, abnormal PCT and unexplained infertility should be considered for evaluation of sperm antibodies.

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