

ANTISPERM ANTIBODY—A CAUSE OF UNEXPLAINED INFERTILITY

by

P. S. BHANDARI
(MRS.) RADHA JAIN

and

(MRS.) URMILA GUPTA

SUMMARY

In an attempt to know the role of antispermatozoal antibodies in unexplained infertility, 139 couples of different fertility status were studied. The incidence of antispermatozoal antibody titre in the sera of men and women of unexplained infertility was found to be 39.8% and 21.4% respectively. This was significantly higher as compared to the incidence in other groups suggesting a correlation between antispermatozoal antibody and unexplained infertility.

Clinical interest in the field of immunological factor of human sterility was aroused by the reports of Wilson (1954) and Rumke (1954). Both these investigators independently discovered antispermatozoal antibodies in the blood sera of oligospermic individuals.

Rumke and Hellinga (1959) found antisperm antibodies in the sera of 67 patients out of 2015 men i.e. in 3% in titres of 1:32 or higher by Kibricks' method.

Franklin and Dukes (1964) and Fjallbrant (1965) also observed antisperm antibodies in infertile couples. Besides these a lot of work has been done by various workers in this field but there are perplexing variations in the incidence of antispermatozoal antibodies in the sera of both infertile and fertile groups (control) in the reports of various workers.

The problems of infertility is seen quite frequently in the eastern part of Uttar Pradesh. We therefore carried out the study to know the role and significance of the immunological factors, if any in cases of unexplained infertility.

The aim of the study was to find out iso-agglutinins in the sera of females and auto-agglutinins in the sera of males in cases of infertility.

Material and Methods

This study was carried out at Nehru Hospital, B.R.D. Medical College, Gorakhpur from January 1982 to July 1983. All the couples studied were grouped into one of the following categories, strictly on the basis of history and clinical evaluation.

Group A: Couples with no demonstrable cause for infertility.

Group B: Couples of known cause for infertility.

Group C: Couples of known infertility.

From: B.R.D. Medical College, Gorakhpur, U.P. (India).

Accepted for publication on 14-6-84.

In females complete pelvic examination, Rubin's test, hysterosalpingogram and endometrial biopsy were performed. In males both the testes, epididymis and vas deferens were examined. Rectal examination was done to know the state of prostate and seminal vesicles.

From male partners specimen of ejaculate was obtained by masturbation after atleast on abstinence of 7 days and complete semen analysis was done. Semen of those patients who had low sperm count, was centrifuged to concentrate the sperms to approximately 50 million/ml.

Serum was obtained by centrifuging 10 ml of clotted blood sample from both partners obtained by venipuncture. Both husband's and wife's serum were tested for antispermatozoal antibodies against the ejaculate from their male partners or from the donor in case of azoospermic male partners by Franklin and Dukes (1959) method.

Observation

Present study comprises of 139 couples of infertility coming to the Nehru Hospital, B.R.D. Medical College Gorakhpur since January 1982 to July 1983. Of these 139 couples, 28 couples were of unexplained infertility, 111 were of known cause for infertility and 21 couples were of known fertility.

In our study antispermatozoal antibodies were found in 16 (57.1%) out of

28 couples with unexplained infertility (Group A) in either wife or husband's serum. This was significantly higher as compared to the incidence of 26.1% in the couples of known causes for infertility (Group B) and 14.3% in couples of known fertility (Group C).

The study of the serum of male partners for auto antibodies against sperm showed a maximum incidence of 39.3% in 28 men with unexplained infertility. The incidence in other groups was found to be on the lower side being 19.8% in males of known causes for infertility and 9.5% in the males of known fertility. Most of the men with unexplained infertility in our study had a history or were suffering from filarial infection of epididymis. Antibody titre observed was in the range of 1:16 to 1:64 (Table I).

It was observed that agglutination occurred only in the presence of mobile spermatozoa and none was seen in the fresh ejaculate until liquifaction began and active sperm movement developed (10-15 minutes). Within a short time however the agglutinated spermatozoa became sluggish and finally lost their mobility.

In females 6 (21.4%) out of 28 women of unexplained infertility had antispermatozoal antibodies in their serum, while only 9 (8.1%) out of 111 women of known causes for infertility and 1 (4.8%) out of

TABLE I
Incidence and Titre of Antibodies in the Serum of Males in Different Groups

Groups	Total No. of Males	Total No. of Males Antibody (-)	Total No. of Males Antibody (+)	Antibody titre		
				1 : 16	1 : 32	1 : 64
A	28 (100%)	17 (60.7%)	11 (39.3%)	3	6	2
B	111 (100%)	89 (80.2%)	22 (19.8%)	11	11	0
C	21 (100%)	19 (90.5%)	2 (9.5%)	2	0	0

21 women of known fertility showed positive reaction for antispermatozoal antibodies in their serum (Table II).

men in our study with unexplained infertility had a history of filarial infection of epididymis. This might be the cause of

TABLE II
Incidence and Titre of Antibodies in the Serum of Females in Different Groups

Groups	Total No. of Females	Total No. of Females Antibody (—)	Total No. of Females Antibody (+)	Antibody titre		
				1 : 16	1 : 32	1 : 64
A	28 (100%)	22 (78.6%)	6 (21.4%)	2	4	0
B	111 (100%)	102 (91.9%)	9 (8.1%)	4	5	0
C	21 (100%)	20 (95.2%)	1 (4.8%)	1	0	0

Four couples from Group A of unexplained infertility, in whom female partners had antisperm antibodies in their serum were persuaded to use condom for a period of six months. Antibody titre declined in three women (75%). It dropped to non-detectable level in one (25%) and pregnancy occurred only in this female, when the intercourse was resumed at the time of expected ovulation.

Five males in Group A of unexplained infertility with antibodies in their serum were given medrol (methyl prednisolone) 96 mg/day for one week. Antibody titre declined in 3 males but pregnancy did not occur in any of the patient's wife.

Discussion

Higher incidence (39.3%) of antisperm antibodies in the sera of males of unexplained infertility as compared to the men of other groups suggests that an immunological factor perhaps plays a role as a causative factor in cases of unexplained infertility. Our finding is significantly higher than 3.2% as reported by Rumke and Hellinga (1959) and 3.4% as reported by Fjallbrant (1965). As most of the

higher incidence of antisperm antibodies in this group. Similar was the observation of Cruickshank and Stuart Smith (1959) and Bandhauer (1963). Filarial infection causing temporary partial or complete obstruction of vas leading to extravasation and spermatostasis was probably also responsible for formation of antibodies. Similar was the opinion of Rumke and Hellinga (1959).

It was observed that agglutinated spermatozoa lost their motility. Similar observations have been reported by Wilson (1954) and Fjallbrant (1965) but this is in contrast to there reported by Schwimmer *et al* (1967) and Hanafiah *et al* (1972).

We observed an incidence of 21.4% of antispermatozoal antibodies in the sera of women with unexplained infertility. This is parallel to those of 20% as reported by Glass and Vaidya (1970) and 19% as reported by Bostcher and Hal (1968) but is in contrast to the incidence reported by Franklin and Dukes who showed a much higher incidence being 89.9% (1964) and 67.2% (1968). The higher incidence of antibodies in sera of women in unexplained infertility as compared to the women of other groups is suggestive of a corre-

lation between antisperm antibodies and unexplained infertility. Schwimmer *et al* (1967) did not find any difference in the incidence of antisperm antibodies in the sera of women of primary unexplained infertility and in the control group being 37.5% and 34.1% respectively.

In contrast to above findings, Israelstam (1969) reported only 7% incidence of antibodies in 45 women of unexplained infertility. Tyler *et al* (1967) observed an incidence of 14% of antisperm antibodies in the women of unexplained infertility.

The incidence of 8.1% of antispermatozoal antibodies in the sera of women of known causes for infertility, observed in our study is similar to 7.1% reported by Hanafiah *et al* (1972).

We did not get much encouraging results after condom therapy. Only one woman out of four couples conceived after condom therapy while much higher results have been reported by various workers after condom therapy i.e. 37.1% as reported by Glass and Vaidya, 50% as reported by Shulman *et al* (1972) and

68% as reported by Franklin and Dukes (1968).

References

1. Bandhauer, K.: *Klin. Med.* 18: 204, 1963.
2. Boettcher, B. and Hay, J.: *Am. J. Obstet. Gynec.* 100: 437, 1968.
3. Cruickshank, B. and Stuart, Smith, D. A.: *Lancet.* 1: 708, 1959.
4. Franklin, R. and Dukes, C. D.: *Am. J. Obstet. Gynec.* 89: 6, 1964.
5. Fjallbrant, B.: *Acta. Obstet. Gynec. Scand.* 44: 474, 1965.
6. Glass, R. H. and Vaidya, R. A.: *Fertil. Steril.* 21: 657, 1970.
7. Hanafiah, J. H., Epstein, J. A. and Sobrero, A. J.: *Fertil. Steril.* 23: 493, 1972.
8. Israelstam, D. M.: *Fertil. Steril.* 20: 275, 1969.
9. Rumke, P.: *Vox Sang.* 4: 135, 1954.
10. Rumke, P. and Hellinga, G.: *Amer. J. Clin. Patho.* 32: 367, 1959.
11. Schwimmer, W. B., Ustay, K. A. and Behrman, S. J.: *Fertil. Steril.* 18: 167, 1967.
12. Shulman, S., Zappi, E., Ahmed, U. and Davis, J. E.: *Contraception.* 5: 1972.
13. Tyler, A., Tyler, E. T. and Denny, P. C.: "Concepts and experiments in immunoreproduction". *Fertility Sterility.* 18: 153, 1967.
14. Wilson, L.: *Proc. Soc. Exp. Biol. N.Y.* 85: 652, 1954.