

SPERM ANTIBODY IN INFERTILITY

by

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Antigenic effect of spermatozoa was demonstrated separately by Landsteiner (1899), Metchnikoff (1900) detected circulating antibodies in guinea-pigs. It was, however, in 1961 that circulating antibodies were established in human females (Nekabayashi *et al* 1961).

The present study has been taken up with a view to find any possible role of sperm antibodies in causing infertility.

Material and Methods

Nine hundred couples who had no organic disease, attending Upadhyay Institute of Obstetrics & Gynaecology, Patna, from July, 1977 to August, 1978 have been included in the present study.

The couples were divided in the following groups:—

- (a) Primary infertility
- (b) Secondary infertility
- (c) Fertile couples.

Detailed clinical history, routine physical and laboratory tests were done. The following special laboratory tests were

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then carried out:—Blood grouping and Rh typing, V.D.R.L. of husband and wife, husband's seminal fluid analysis and culture. This was followed by sperm agglutination test, by the following procedure:—

Husbands were directed to report to the laboratory with their wives after an abstinence period of 5 days. They were requested to produce samples of seminal fluids by autoerotic manipulation. Count, motility and morphology was noted after liquifaction.

Sperm agglutination test was performed within one hour of collection. Sperm agglutination technique of Franklin and Dukes (1964) was adopted. Seminal fluid specimens, which had positive culture reports, inflammatory cells, count less than 25 millions per ml. and motility less than 50% at first hour were discarded. Samples having count of more than 50 millions per ml. were adjusted in between 25 to 50 millions per ml.

Blood was collected by venepuncture from female partners. Serum was separated and kept in a refrigerator till the time of performance of the test.

Specimens were examined microscopically at 1 hour, 2 hours and 4 hours intervals. Ten high power fields were examined for agglutination and motility. Positive reports were given when more

than 1 agglutination clump was seen in each high power field or more than 90% spermatozoa were immobilized as compared to control.

Observations

Sperm Agglutination Test in 850 Infertile and 50 Fertile Couple.

pregnant. Seven cases (4.9%) still possessed sperm antibody activity in their sera and have not conceived so far.

Discussion

Sperm agglutination test was performed in 850 cases of infertility and 50 fertile couple. Six hundred and nineteen

TABLE I
Incidence of Sperm Agglutination

Type of Couples	Nos. of Couples	Percentage	Result of S.A. Test	
			No of Positive	Percentage
1. Primary infertility	619	72.8	179	28.6
2. Secondary infertility	231	27.2	37	16.0
3. Fertile couples	50	—	Nil	Nil

Fifty fertile cases (control) have been excluded in calculating the percentage. (72.8%) belonged to primary infertility and 231 (27.2%) were of secondary in-

TABLE II
Sperm Antibody Titre

Type of Couples	Total No. of positive cases	Agglutination				Immobilization
		Serum Undiluted	Serum 1/10	Serum 1/30	Serum 1/50	
1. Primary infertility	179	41	89	29	14	6
2. Secondary infertility	37	7	15	8	5	2

Management of S.A. Positive Women

Positive couples were then advised to refrain from direct sexual intercourse or alternatively to use condom for a period of 3 months. A course of corticosteroids for 10-15 days, under cover of a bacteriocidal drug was also prescribed.

Only 145 cases reported for follow-up. Sperm agglutination test was again performed. One hundred and thirty-eight (95.1%) of them became S. A. negative, subsequently 22 cases (16.6%) became

fertility. In our series 216 cases were S.A. Positive-179 (28.6%) of primary infertility and 37 (16.0%) of secondary infertility.

The incidence of S.A. positive cases was 78.9% in a series of 19 cases by Franklin and Dukes (1964). When the same authors extended their series to 67 cases the positive results came down to 67.2% (1968). Schwimmer, *et al* (1967) reported 37.5% of S.A. activity out of 64 primary infertile women and in 50% of 32 women with unexplained secondary

infertility. Israelstam (1969) reported 7% of positive S.A. test in group of 45 infertile women. Glass and Vaidya (1970) also reported 17% positive S.A. test in primary and 24% in secondary infertility cases. Mukharjee *et al* (1973) reported 19% positive S.A. tests in cases of unexplained infertility. Gunagh *et al* (1978) observed 18% positive in a series of 50 cases of infertility. Shrivastava *et al* (1978) reported positive S.A. test in 10.1% cases of unexplained infertility and 5% in cases with organic disease.

The most important cause of this wide variation could be the method of interpretation of the test. Sperm agglutination test is of non-specific nature. Bacterial contamination, temperature changes, normal human serum and physiological saline solutions have all been reported to cause non-specific agglutination. Besides these, in many seminal fluids, spermatozoa may spontaneously agglutinate. We have here preferred to report S.A. positive only when we found number of clumps higher than the control or immobilization in 10 high power fields. We have in this instance accepted Kolodny *et al* (1971).

Furthermore, we advocate for quantitative expression of the results than the qualitative (+ or ++), as it is of much help for the follow-up of the cases and reduces the inherent errors of qualitative expression. In view of spontaneous agglutination noted by us as discussed above adoption of qualitative symbol (+ or ++) is at its best an impression and likely to lead to errors in results.

The fact that the wives treated with corticosteroids and bacteriocidal drugs could have pregnancies (22 cases 16.6%), has raised immense importance of the S.A. test. It cannot be ignored that there is some immunological mechanism at play in these cases. The rationale for

treating the female partners of couples is based on the immuno-depressant action of corticosteroids.

The exact nature of antigenicity of spermatozoa or sperm antibodies is not clearly understood. We have been able to note two definite types of antibodies-agglutinating and immobilizing. Whether, these two distinct antibodies have been produced in response to a single antigen or multiple antigens is difficult to predict from our present state of knowledge.

It is interesting to observe that most of the patients receiving treatment with corticosteroids, abstinence or condoms became free from sperm antibodies within a period of 3 months. Pregnancy resulted in 22 cases (16.6%). However, those who did not conceive showed no evidence of reappearance of sperm antibodies inspite of exposures during a follow up period of 6 months. This compels us to believe that the nature of this antigen (or antigens?) is different from Rh antigens or other antigens as regards antibody formation. In Rh antigenic activity there is a progressive rise of antibody titre with exposure whereas immunological response to sperm antigens is a very slow process. Probably antigen in non-specific.

Positive S.A. cases were noted mainly to occur in higher age groups (30-40 years). Considering the early marriages so common here, the total number of exposures to spermatozoa in the above mentioned age group is significant. We believe it to be a contributory factor in immunological aspect of infertility. By the way, Kolodny *et al* noted higher S.A. positive cases in prostitutes who had similarly high exposures to spermatozoa.

Summary

From the foregoing remarks, we still

wonder about the exact role of sperm agglutination in causing infertility, but to rule it out absolutely as non-entity is difficult, because of the resulting pregnancies on treatment where no other cause of infertility was found. This study is opening a door for further immunological study in infertility.

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