

## ANTISPERM ANTIBODIES IN RELATION TO ABO INCOMPATIBILITY IN CASES OF RECURRENT ABORTIONS

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### SUMMARY

It is believed that ABO incompatibility plays a role in the aetiology of recurrent abortions and also that a particular blood group itself may make a women more susceptible to recurrent abortions.

In our study we find that antisperm antibody presence was equally distributed in all types of blood group of recurrent abortions and controls also.

However when relationship between ABO incompatibility of couples and presence of antisperm antibodies in both groups of recurrent abortions and controls were studied it was found that the highest incidence was in AO incompatibility and minimum in B/AB (80% and 33.33% and 66.6% and 0% respectively).

### INTRODUCTION

It is believed that ABO incompatibility plays a role in the etiology of recurrent abortions and also that a particular blood group itself may make a women more susceptible to recurrent abortions (Hurkat and Agarwal 1985). Javert in 1954 reported that out of 62 cases of recurrent abortions 51.6% were having blood group 'O' where as only 3 cases each belonged to blood group 'B' and 'AB'. Further immu-

nologic relationship for recurrent spontaneous abortions has been proposed for many couples with otherwise unexplained reproductive failure. And it has been repeatedly by demonstrated that human sperm has immunologic potential. Antisperm, antibodies are thought to be playing important role (Donat et al 1989). ABO antigens are known to be absorbed on spermatozoa from seminal plasma. These antigens either separately or in combination with sperm specific antigens evoke immune response and antibody formation. Whether ABO incompatibility and presence of antisperm

antibodies in women have any relationship has not been explored properly. In the present study an attempt has been made to find out the same in women with recurrent abortions.

**MATERIAL & METHODS**

This study was carried out in the department of Obstetric & Gynaecology, Mahatma Gandhi Institute of Medical Sciences, Sevagram with the help from Sperm Biotechnology laboratory New Delhi and also the departments of Physiology and Biochemistry of MGIMS, Sevagram.

The study group comprised of 60 cases of recurrent abortions (women having 2 or more abortions) who attended obstetrics and gynaecology department of MGIMS, Sevagram. The controls were 60 fertile women with one or more live issues (No Mishap). In all the couples blood group, type and other relevant investigations were done. Further the circulating antisperm antibodies were detected by enzyme lined immunosorbent assay (ELISA).

S1 (30 Cases) : Pregnant Women in any

trimester with history of previous 1st trimester abortions.

S2 (30 Cases) : Non pregnant women with a prior history of 2 abortions.

C1 (30 Cases) : Pregnant women in any trimester with history of live birth.

C2 (30 Cases) : Non pregnant women with previous history of live birth, Distribution of age was similar in the different groups.

**OBSERVATION**

Finding of ASA was almost similar in all blood groups (Table I). Positive for the ASA was seen maximum in the A/O incompatibility followed by A/B (80%) then by B/O incompatibility (77.77%). The blood group B/AB incompatibility showed minimum ASA positivity (33.33%). In the control cases also it was seen that maximum positivity for ASA was seen in the A/O and A/B incompatible groups

**Table I**

**Incidence of antisperm antibodies in relation to various blood groups**

Blood Group	Study Group				Control Group					
	Total study n = 60	ASA+VE		ASA-VE		Total of control n = 60	ASA+VE		ASA-VE	
		No.	%	No.	%		No.	No.	%	No.
+ve	18	13	(72.22)	5	(27.78)	16	5	(31.25)	11	(68.75)
+ve	15	10	(66.67)	5	(33.33)	10	10	(50)	10	(50)
+ve	5	3	(6)	2	(40)	3	1	(33.03)	2	(66.66)
+ve	22	14	(63.63)	8	(36.37)	21	7	(33.03)	14	(66.66)
Total	60	40	(66.67)	20	(33.33)	60	23	(38.33)	37	(61.67)



(66.6%) followed by B/O and O/AB (40% cases incompatible group). No ASA positivity was observed in B/AB incompatible group (Table II and Table III).

To assess the positivity for ASA in various incompatible blood groups, test of statistical

significance could not be applied due to small number of objectives in each group.

**DISCUSSION**

Blood group antigens are observed over the surface of the sperms. These antigens either

**Table II**

**ASA Positivity in ABO Caompatible Blood Groups**

Blood Group Compatible couples	Total		Study Group				Control Group					
	study		ASA Positive		ASA Negative		Total of control		ASA Positive		ASA Negative	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
A / A	7	(100)	5	(71.43)	2	(28.57)	6	(100)	1	(16.60)	5	(68.34)
B / B	4	(100)	1	(25)	3	(75)	4	(100)	1	(25)	3	(75)
AB / AB	1	(100)	0	(-)	1	(100)	2	(100)	-	-	2	(100)
O / O	7	(100)	3	(42.85)	4	(52.15)	12	(100)	4	(33.33)	8	(66.66)
<b>Total</b>	<b>19</b>	<b>(100)</b>	<b>9</b>	<b>(47.36)</b>	<b>10</b>	<b>(52.64)</b>	<b>24</b>	<b>(100)</b>	<b>6</b>	<b>(25)</b>	<b>18</b>	<b>(75)</b>

**Table III**

**ASA Positivity in ABO in-compatible blood groups**

Blood Group Incompaty- bility	Total Cases S1+S2		ASA + Ve		ASA + Ve		Total of Cases C1+C2		ASA + Ve		ASA + Ve	
	S1+S2		No. %		No. %		C1+C2		No. %		No. %	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
A / O	13	(100)	11	(84.61)	2	(15.39)	12	(100)	8	(66.66)	4	(33.33)
A / B	5	(100)	4	(60)	1	(20)	5	(100)	2	(40.00)	2	(66.66)
B / O	9	(100)	7	(97.77)	2	(22.23)	10	(100)	4	(40)	6	(60)
B / AB	3	(100)	1	(33.33)	2	(66.66)	1	(100)	—	—	1	(100)
O / AB	8	(100)	6	(75)	2	(22.5)	5	(100)	2	(40)	3	(60)
<b>Total</b>	<b>41</b>	<b>(100)</b>	<b>31</b>	<b>(75.60)</b>	<b>10</b>	<b>(24.40)</b>	<b>36</b>	<b>(100)</b>	<b>17</b>	<b>(47.22)</b>	<b>19</b>	<b>(52.77)</b>

separately or in combination with sperm specific antigens evoke immune response and antibody formation. Antibodies in turn react with the sperm and isoagglutination of the sperm takes place. Such patients may have high circulating levels of antisperm antibodies. Franklin and Duke in 1964 in a series of 89 patient found that among 15 patients who possessed circulating ASA 6(40%) were ABO, incompatibles.

Poland et al (1981) were of the contention that the commonest blood group in recurrent abortion was 'O'. They found 50% belonged to the blood group "O" and only 11% belonged to blood group "B".

But in another study conducted by Hurkat and Agarwal (1985) it was seen that blood group 'AB' had higher precedance in recurrent abortions that the blood group 'O'.

As evidence is coming in relation to various immunological factors responsible for recurrent abortions and ABO blood group incompatibilities in causing recurrent abortions it is

imperative that we do try to find whether different antigens have any relationship with each other and whether they help each other in adding to presence of antibodies at various levels.

We did find some relationship in our study, like higher incidence of ASA in women with ABO incompatibility in the couples not only in women with recurrent abortions but with controls also. The problem was maximum in AO (88%) incompatibility and minimum in B/AB (66.66%) in study groups 33.33% and 0% respectively in controls.

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Table III  
ASA positivity in ABO-incompatible blood groups

Blood Group	Total Cases	ASA +ve		Total of ASA +ve		ASA +ve		ASA +ve	
		No.	%	No.	%	No.	%	No.	%
A \ O	12 (100)	11 (91.67)	91.67	12 (100)	100	12 (100)	100	12 (100)	100
A \ B	5 (100)	4 (80)	80	5 (100)	100	5 (100)	100	5 (100)	100
B \ O	9 (100)	7 (77.77)	85.22	9 (100)	100	9 (100)	100	9 (100)	100
B \ AB	2 (100)	1 (50)	50	2 (100)	100	2 (100)	100	2 (100)	100
O \ AB	8 (100)	6 (75)	75	8 (100)	100	8 (100)	100	8 (100)	100
Total	41 (100)	37 (90.24)	90.24	41 (100)	100	41 (100)	100	41 (100)	100