CORRELATION BETWEEN SERUM ANTICHLAMYDIAL ANTIBODIES AND TUBAL FACTOR IN INFERTILITY

M. JAIN ● S. GUPTA ● M. SINGH ● A. K. GULATI

SUMMARY

Fifty seven infertile women were studied to find out correlation, if any, between presence of antichlamydial antibodies and tubal factor infertility. The seropositivity against chlamydia in infertile women was statistically significant on comparison with control. The antichlamydial antibodies were more prevalent in women with tubal factor infertility and more precisely in those with fimbrial block (distal tubal obstruction).

INTRODUCTION

Infertility is one of the most common gynaecological problems today. The prevalence of infertility has been reported as 15% (Wentz, 1988). Female infertility accounts for about one-third of all cases of infertility with tubal factor responsible in 30-50 percent (Logambal, 1989). thus tubal dysfunction, resulting from pelvic infection continues to be one of the major causes of infertility in women. Among the various agents causing pelvic inflammatory disease, the incidence of chlamydial salpingitis is progressively increasing. The present study is an attempt to establish correlation, if any, between serum antichlamydial antibodies and tubal factor in infertile women.

Dept. of Obst. & Gyn. & Microbio. Inst. of Med. Sci. Banaras, Varanasi.

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MATERIAL AND METHODS

The study was carried out in 57 infertile cases attending the Gynaecological out-patient Department of Sir Sunderlal Hospital, Institute of Medical Sciences, Banaras Hindu University, Varanasi from April 1990 to March 1992. Twenty cases were taken as control consisting of women seeking tube ligation. After detailed clinical examination, the infertile women were subjected to Premenstrual endometrial biopsy, Hysterosalpingography and Laparoscopy, besides other routine tests.

The presence of antichlamydial antibodies was ascertained by Indirect Immunoperoxidase Assay. A positive reaction, a blue precipitate inside the infected cells, can be seen with the aid of an ordinary light microscope. A titer of $\geq$ 1:64 was considered as positive.

OBSERVATIONS

Antichlamydial antibodies were positive in 28.07% (16.57) of infertile women and in 5% of control cases (Table I).

Most of infertile women belonged to 26-30 yrs age group. However, tubal factor and chlamydial sero-positivity was maximally present in infertile women in 31-35 yrs age group. The majority of women 59.65% (34/57) had tubal factor infertility. Chlamydial seropositivity was 38.2% in patients with tubal factor (Table II).

Maximum number of infertile cases (29.83%) presented with menstrual abnormalities followed by infertility (24.56%) and abdominal pain (21.05%). There was no specific complaint in women with positive chlamydial serology.

Ampullary block was the most common finding in tubal factor group. Chlamydial seropositivity was more frequent with distal tubal block (Table III).

Table I

Chlamydial Serology in Patients and Control

Chlamydial serology	Control		Infertile women	
	No.	%	No.	%
Positive	1	5	16	28.07
Negative	19	95	41	71.93
Total	20	100	57	100

(Control vs Patients P < 0.05)

Table II

Tubal Factor, Chlamydial Serology and Age Distribution of Infertile Women

Age (yrs)	Infertile women		TF		Sero (+)		NTF		Sero (+)	
	No.	(%)	No.	(%)	No.	(%)	No.	(%)	No.	(%)
16-20	2	(3.5)	-	-	-	-	2	(100.0)	-	-
21-25	19	(33.3)	11	(57.8)	3	(27.2)	8	(42.0)	1	(12.5)
26-30	23	(40.3)	12	(52.17)	5	(41.6)	11	(47.8)	2	918.1)
31-35	13	(22.8)	11	(84.6)	5	(45.4)	2	(15.3)	-	-
Total	57	34	13	23	3					

Seropositivity in TF vs Control P < 0.05
Seropositivity in TF vs montubal P < 0.05

TF = Tubal factor
NTF = nontubal factor
Sero (+) = Seropositive

Maximum number of infertility cases (64.71%) had bilateral tubal block followed by bilateral hydrosalpinx. Chlamydial seropositivity was more in bilateral tubal disease, 44.4% (12/27) as compared to unilateral tubal disease - 14.3% (1/7) (Table IV).

DISCUSSION

The inflammatory of the tube from infection by various agents like Gonococci, Chlamydiae, and tubercular bacilli or a combination of them is the principal factor in producing tubal damage and subsequent infertility. The salpingitis may be clinically evident as a Gonococcal infection, or it may run an asymptomatic course as with chlamydial infection. Therefore the chances for chlamydia induced salpingitis to run a protracted and

Table III

Correlation between site of block and Chlamydial Serology (n = 34)

Site of block	No. of Cases		Chlamydial Seropositivity	
	No.	%	No.	%
Ampullary	11	(32.3)	5	(45.4)
Fimbrial	5	(14.7)	4	(80.0)
Cornual	9	(26.4)	2	(22.2)
Isthmic	1	(2.94)	-	-
Hydrosalpinx	8	(23.5)	2	(25.0)
Total	34		13	

Fimbrial block vs Control = $P < 0.01$
Cornual block vs Control = $P > 0.05$

Table IV

Correlation between type of block and Chlamydial Serology

Type of block	No. of Cases		Chlamydial Seropositivity	
	No.	%	No.	%
Unilateral	4	11.76	1	25.0
Bilateral	22	64.7	10	45.4
Hydrosalpinx				
Unilateral	3	8.8	-	-
Bilateral	5	14.71	2	40.0
Total	34		13	

chronic course are quite high and the tubal damage to an extent that can lead to infertility may result from it. The association between subclinical salpingitis by chlamydia trachomatis and tubal infertility can be established by showing the presence of antichlamydial antibodies in patient's serum or by isolation of the organism.

In the present series, chlamydial seropositivity in infertile women was about five and a half times more frequent than in control (P 0.05). Sellors et al (1988) also found statistically significant seropositivity against chlamydia in infertile women on comparison with control.

The incidence of antichlamydial seropositivity in our infertile women was 28%, which is quite similar to the finding of Jones et al (1982) (35%) and Kane et al (1984) (22%). However, Punnonen et al. (1979) and Conway et al (1984) found it in 57% and 47.9% of infertile cases respectively. That the chlamydial seropositivity is more important than isolation in diagnosis, was confirmed by Ripa et al (1980), and Osser and Persson (1982). The higher incidence of seropositivity shown by some workers might be due to greater number of women with tubal damage, in their series. It may also be attributed to greater promiscuity in the society.

As the sexual exposure increases with age and so the chances of acquiring chlamydial infection and resultant tubal damage, the incidence of seropositivity is likely to increase with the increasing age of a woman. This conjecture was strengthened by our finding of increasing chlamydial seropositivity with increasing age of infertility cases in the present series. On the contrary, Mardh et al (1977) and Gjonnaess et al (1982) showed maximum chlamydial isolation in 15-20 years age group and a decline with increasing age.

No specific symptom could be attributed to the causative agent in chlamydia induced salpingtis. Therefore, a high degree of suspicion index is required to search for the chlamydia or otherwise a routine chlamydial serology and/or culture is advisable in infertile women.

Tubal factor was responsible for producing infertility in majority of our women (59.65%) in this study. Chlamydial seropositivity, as compared to women with no tubal factor ($P < 0.05$). Gibson et al (1983) found correlation between seropositivity and pelvic adhesions. Conway et al (184) demonstrated seropositivity for chlamydia in 75% of infertile women with tubal damage and in only 31% of infertile women with healthy tubes. A correlation has also been found between the titres of chlamydial antibody and the severity of clinically graded tubal inflammation (Treharne et al 1979).

Site of tubal block also determines the incidence of seropositivity. The chlamydial seropositivity in our patients with fimbrial block was statistically significant on comparison with control ($P < 0.01$). However, it was not so with patients having cornual block. This is in conformity with the finding of Kane et al (1984). Thus chlamydial infection is more likely to be associated with peripheral endosalpingitis and not with cornual disease.

Maximum number of our cases with tubal infertility (64.7%) had bilateral tubal block followed by bilateral hydrosalpinx. Punnonen et al (1979) demonstrated chlamydial seropositivity in almost all cases with sactosalpinx. They also showed very high titres in 39% of patients with bilateral tubal obstruction. Thus high titre and high prevalence of seropositivity might be associated with bilateral tubal damage.

BIBLIOGRAPHY

1. *Conway D., Glazner C., Caul E. O., Hodgson J., Hal M. G. R., Clarke S. and Stirrat G. M. : Lancet : 1, 191, 1984.*
2. *Gibson M., Gump D. and Ashikaga T. : Am. J. Obstet. and Gynec. : 146, 153, 1983.*
3. *Gjonnaess H., Dalaker K., Anestad G., Mardh P. A., Kvile G. and Bergan T. : Obstet. and Gynec. : 59, 550, 1982.*
4. *Jones B. R., Ardery B. R., Hui S. L. and Cleary R*

E. : Fertil. Steril. : 38, 553, 1982.
Kane J. L., Woodland R. M., Forsey T., Darougar S. and Elder M. G. : Fertil. Steril. : 42, 843, 1984.
Logambal A. : Post-graduate Obstetrics and Gynaecology 4th edn., 1989, p. 338.
Mardh P. A., ripa K. T., Svensson L. and Westrom L., N. Eng. : J. Med. : 296, 1377, 1977.
Osser S. and Persson K. : Obstet. 7 Gynec. : 59, 206, 1982.
Punnonen R., Terho P., Nikkanen V. and Meurman O. : Fertil. Steril. : 31, 656, 1979.
Ripa K. T., Svensson L., Treharne J. D., Westerom L. and Mardh P. A. : Am. J. Obstet. and Gynec. : 138, 960, 1980.
Sellors J. W., Mahony J. B., Chernesky M. A. and Rath D. J. : Fertil. Steril. : 49, 451, 1988.
Treharne J. D., Ripa K. T., Mardh P. A., Westrom L. and Darougar S. : Brit. J. Vener. Dis. : 55, 26, 1979.
Wentz A. C. : Novak's Textbook of Gynaecology, XIth Ed., 1988, p. 263, Williams and Wilkins, Baltimore.