Sero Prevalence of C.trachomatis in Patient of Bad Obstetric History (BOH)

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Abstracts: Background : Bad obstetric history (BOH) implies previous unfavorable fetal outcome. Causes of BOH may be genetic, hormonal, abnormal maternal immune response and maternal infection. C.trachomatis is the most common bacterial sexually transmitted infection worldwide. Also it has been associated with adverse outcomes of pregnancy. The identification of *C. trachomatis* during pregnancy and its early treatment prior to delivery would therefore be an important strategy to prevent multiple complications in mother. Serology might act as a convenient tool for diagnosis. Methods:139 pregnant patients having history of BOH as study group and 30 normal pregnant as control group were tested by Indirect ELISA for detection of anti C.trachomatis IgM and IgG. Results: Anti *C.trachomatis* IgM was detected in 21 (15.11%) patients and anti *C.trachomatis* IgG was detected in 33 (23.74%) patients. Interpretation and Conclusion: Higher numbers of positive patients were found among younger age group. Statistical analysis shows that serological detection of anti *C.trachomatis* IgM and IgG antibodies for detection of current and past infection by *C.trachomatis* is significant in BOH patients. [Dharasandia M et al NJIRM 2012; 3(5) : 69-73]

Key words: BOH, Chlamydia trachomatis, C.trachomatis, IgG, Ig M

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Introduction: Bad obstetric history (BOH) implies previous unfavorable fetal outcomes in terms of two or more consecutive spontaneous abortions, history of intrauterine fetal death, intrauterine growth retardation, still births, early neonatal death and/or congenital anomalies[1].It is well realized that at least 12-15 % of all recognized conception end in miscarriage, and pre clinical pregnancy loss rate is still higher 22-30 %[2].

Cause of BOH may be genetic, hormonal, abnormal maternal immune response and maternal infection[1].Recurrent pregnancy loss due to maternal infections transmissible *in utero* at various stages of gestation can be caused by a wide array of organisms which include the *Chlamydia trachomatis*[1]. C.trachomatis is the most common bacterial sexually transmitted infection worldwide [3, 4].

Furthermore, an existing Chlamydia infection increases the risk of contracting HIV and/or Herpes simplex virus infection and for Human Papilloma Virus (HPV) infection, where Chlamydia can act as cofactor for transmission [5,6].Chlamydia are also attributed to be a risk factor for the development of cervical carcinoma[7]. The asymptomatic nature of Chlamydia genital infection complicated with occurrence of severe sequelae in untreated patients makes the laboratory evaluation of great importance in diagnosis of the disease. But the diagnostic procedure like cell culture and nuclear technique make the diagnosis of Chlamydia more complicated and furthermore those procedures are available only at few laboratories. But serology might be a convenient tool for those laboratories[5]. The aim of present study is to identify the role of *C.trachomatis* in patients of BOH by assessing prevalence through serological detection of anti chlamydial antibody IgM and IgG. It also helps in early diagnosis and treatment of chlamydial infection which strengthen chlamydial control measures.

Material and Methods: The present study was done on outdoor and indoor patients of Obstetrics and Gynecology Department of a tertiary care hospital, from March 2009 to June 2010. Informed consents were taken before collecting the samples from patients.

Total of 169 serum samples were collected. 139 were collected from female patients with bad obstetric history and 30 were collected from normal pregnant patients as control group, attending tertiary care Hospital, Ahmedabad. Patients were selected on the basis of following criteria.

- History of spontaneous abortions - 2 or more than 2 in number

- History of still birth
- History of children with congenital abnormalities
- History of preterm delivery

The samples were transferred to storage vial and preserved till the test performed. All the preserved sera were tested for IgM and IgG antibodies against *Chlamydia trachomatis* infection by indirect ELISA. Kits used were manufactured by Viro-Immune Labor-Diagnostica GmbH, Germany. Standard protocol of ELISA and universal precaution were followed during testing. All the sera were tested according to manufacture guidelines. For IgM ELISA-1 Blank, 1 Negative control, and 3 Positive controls in first row of microtiter plate of ELISA. The test method includes the treatment of sera with IgG sorbent. For IgG ELISA - Blank, 1 Negative control, 1 Positive control and 4 calibrators were used.

Results were analyzed for statistical significance by chi-square test. P value was calculated in study group of BOH patients versus control group of normal pregnant patients with 95% confidence interval. P value less than 0.05 is consider as significant.

Results: 139 patients with BOH were enrolled in this study ranging from age 19 years to 40 years.

Fig.1: Age wise distribution of BOH patient tested.

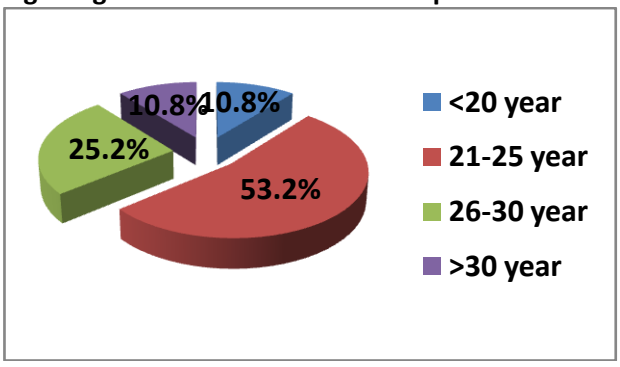


Fig.1 shows that maximum numbers of patients tested of Bad Obstetric History belonged to age group of 21-25 years.

Table 1 shows results of 139 BOH patients tested by anti *C.trachomatis* IgM and IgG.

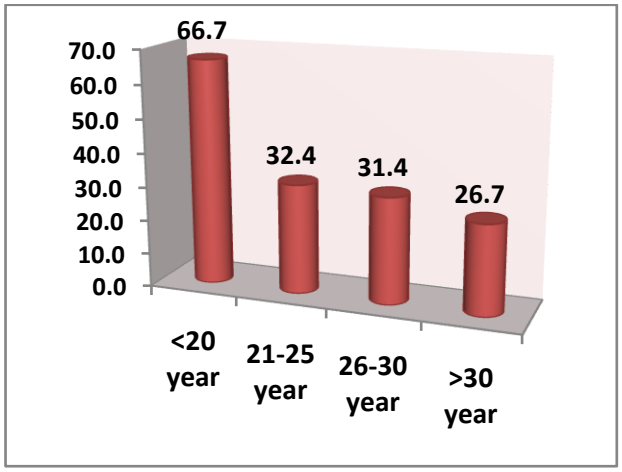
Table 1: Anti *C.trachomatis* IgM and IgG positive patients in different age groups.

Age Group	Total	IgM	IgG	Total (IgM + IgG)	Common (IgG and IgM Both)	Overall Affected patients
<20	15	6	7	13	3	10(66.7)
21-25	74	11	14	25	1	24(32.4)
26-30	35	3	9	12	1	11(31.4)
>30	15	1	3	4	0	4(26.7)
Total	139	21	33	-	5	-

*5 Patients were positive by anti C.trachomatis IgM and IgG both.

From Table-1 in is derived that out of 139 patients tested, anti *C.trachomatis* IgM was detected in 21 (15.11%) patients indicated recent infection and anti *C.trachomatis* IgG was detected in 33(23.74%) indicating past infection. Maximum positive cases, 11 and 14 were noted in younger age group 21-25 years of age for anti chlamydial IgM and IgG respectively.

Figure 2. Overall disease burden caused by *C.trachomatis.*



From Figure.2 it is concluded that the highest prevalence of *C.trachomatis* was among the youngest age group tested <20 years, 66.7 % (Out

of 15 positive patients, 3 patients were positive for both IgM and IgG). From above findings it was observed that increase in the age is inversely proportional to decrease in the disease burden caused by *C.trachomatis*.

Fig.3 Proportion of patient infected with *C.trachomatis*

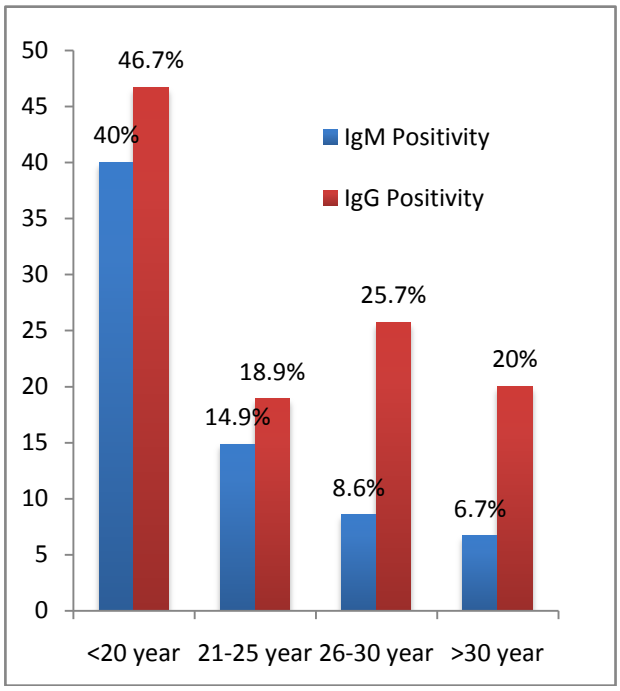


Fig.3 shows that in context of positive *anti C.trachomatis* IgM and IgG. The highest positivity rate was found in the age group of <20years.

Table 2: Presence of anti *C.trachomatis* IgM and IgG against in study group versus control group

	Positive	Negative	P Value
IgM			
Study Group	21	118	0.02(P<0.05)
Control Group	0	30	
IgG			
Study Group	33	106	0.03(P<0.05)
Control Group	2	28	

P<0.05 is significant

*5 Patients were positive by anti C.trachomatis IgM and igG both.

According to Table 2 it was observed that serological detection of anti *C.trachomatis* IgM and IgG antibodies for detection of current and past infection respectively, by *C.trachomatis* is statistically significant in BOH patients.(P<0.05is significant, With 95% confidence Interval)

Discussion: *Chlamydia trachomatis* genital infection is the most common bacterial sexually transmitted infection worldwide with prevalence as low as 9.6% to as high as 48.3% in different categories of women[3, 4, 5, 6] .Present study showed that 15.11% (n=21) patients had current infection and 23.74% (n=33) patients had past infection of *C.trachomatis*. There were 5 patients positive by anti *C.trachomatis* IgM and IgG both. So, overall prevalence of *C.trachomatis* is 35.25% (n=49) in women with Bad Obstetric History.

Studies shows that *C.trachomatis* has wider range of prevalence from 9.6 % to very high prevalence like 48.3 [3,4,5,6]. In present study prevalence of *C.trachomatis* is 35.25% in patient of BOH attending Anti Natal Clinic (ANC) at tertiary care hospital, Ahmedabad. The reason behind this higher prevalence was probably the lower socioeconomic status of most of the patients in the present study. Our study was comparable with the study from Hyderabad and Aligarh, India which reported prevalence 29.8% and 45% respectively [4, 8].The wider difference of prevalence with other studies was probably because of the various study groups of different sample sizes with different clinical parameters. Higher prevalence was reported from developing countries like India where majority people were of low socio economic group, exposed to variety of infections due to poor environment and hygiene[9].

Present study showed that there was higher prevalence in younger age group than older age group. 40% and 46.7% patients having anti C.trachomatis antibodies IgM and IgG respectively, belonged to the age group <20 years. Presents study was comparable with study of R.Malenie et al. who reported higher prevalence in the younger age group of <20 years[10].The age of peak incidence was late teens and early twenties. Present study

also denotes that as the age of patients increases, the prevalence of *C.trachomatis* decreases. That might be because of higher sexual activity in the younger age group accounting for higher transmission rate. Studies also show that method used for the diagnosis has some influence on the results [10,11].

Statistical analysis of results of patients for Anti C.trachomatis IgM and IgG for the diagnosis of current and past infection of C.trachomatis respectively is statistically significant. Serum IgM antibodies against C.trachomatis have been associated with adverse outcome of pregnancy in several studies[12-15]. Present study was comparable with the studies of Gencay M, Harrisons HR and Sweet RL[12,14,15]. Present study also showed statistical correlation with presence of anti C.trachomatis IgG with past infection of C.trachomatis.

Conclusion: From the present study, it can be concluded that in patients of BOH, presence of serum anti *C.trachomatis* IgM and IgG antibodies in diagnosis of current and past infection by *C.trachomatis* is associated significantly. So, *C.trachomatis* infection signifies its role as a risk factor in recurrent abortions, still-births, preterm delivery, and infertility in patients of BOH. Present study signifies the role of serology as a diagnostic tool in *C.trachomatis* infection. So, it is recommended that all antenatal women with history of BOH should be screened for ongoing *C.trachomatis* infection as early diagnosis and appropriate intervention of treatment will help in proper management of these patients. Also diagnosis of asymptomatic cases and treatment will cut of the further transmission in the society, ultimately decreases the morbidity and overall disease burden due to *C.trachomatis* infection.

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