

Seropositivity of Torch Infection in Patients with Bad Obstetrics History

Aakansha Pandey Shukla¹, Adityam Shukla²

¹PG Scholar, Department of Microbiology, Integral Institute of Medical Science & Research Lucknow, India
E-mail: aakanshashukla4[at]gmail.com

²Student, MBBS, Prasad Institute of Medical Science Lucknow, India

Abstract: ***Background and Objectives:** Primary infection with TORCH complex [Toxoplasma, Rubella, Cytomegalovirus (CMV), and Herpes simplex virus II (HSV-II)] in pregnant women can lead to adverse outcome. The present study was undertaken to determine seropositivity of TORCH Infection in Bad obstetric history patients aged 20-46 and to investigate the correlation with sociodemographic characteristics and to find its relation with other various risk factors associated with TORCH among seropositive patients. **Materials and Methods:** The cross-sectional study was carried out for a period of four months in a tertiary care hospital. Total of 40 sera samples were collected at Dept. of Microbiology, IIMS&R, Lucknow from pregnant female patients attending the outdoor and indoor clinic of the department of Obstetrics & Gynaecology by using ELISA. **Results:** Out of the 40 pregnant female patients in the study, seropositivity of IgG/IgM in Toxoplasma gondii, Rubella, CMV, HSV was 5 (12.5%)/2 (5%), 21 (52.5%)/0 (0%), 13 (32.5%)/0 (0%), 21 (52.5%) /2 (5%) respectively. It was found that maximum 35% patients belonged to 26-30 followed by age group 20-25 i.e. 27.5%, age group 31-36 i.e. 25% and least in age group belongs to 37-40 i.e. 7.5% and 41-46 i.e.5%. In this study majority of the patients were belong to rural areas. **Conclusion:** The purpose of screening for TORCH Infection is not only to identify seropositivity, but to help seropositive people identify symptoms and protect themselves from acquiring other various risk factors and to protect their partners and seronegative people from acquiring TORCH. Of the 40 pregnant women with BOH, We recommend that all antenatal cases with such history should be routinely screened for these agents.*

Keywords: TORCH; Seropositivity; Bad obstetric history; IgG; IgM; HSV; ELISA

1. Introduction

Adverse fetal outcomes such as two or more coming spontaneous abortions, history of intrauterine fetal death, intrauterine growth retardation, stillbirth, early neonatal death, or congenital anomalies designated bad obstetric history [1]. Bad obstetric history can be caused due to mixed reasons including genetic, hormonal, abnormal maternal immune response, and maternal infection [2]. TORCH is a group of congenitally acquired infections that may cause significant morbidity and mortality in neonates [3]. The maternal infections that are transmissible in utero at some stages of the pregnancy, can be caused by many organisms, of which the members of the TORCH multiplex, i.e. Toxoplasma gondii, Rubellavirus, (CMV), the Herpes Simplex Virus (HSV) [4]. Maternal infection by TORCH multiplex is a major cause of BOH. Infection with TORCH in pregnancy can cause an embryopathy identified by limb hyperplasia, eye and brain damage, skin lesions and even fatal after effects. The primary infection is probably to have more important effect on fetus than recurrent infection [5]. Toxoplasmosis is produced by an obligate intracellular protozoan parasite Toxoplasma gondii. It is one of the most habitual parasitic infections of humans and other warm-blooded animals. Toxoplasmosis is most threatening for immunocompromised patients and the foetus whose mother is infected in pregnancy [6]. Rubella virus, the unique member of the Rubivirus genus, produced rubella (also known as German measles), an acute exanthematous infection of children and adults. The CMV is a member of Herpes viridae family and is classified as Human herpesvirus Type 5. The HSV-1 and HSV-2 are also known to cause abortion [7]. Herpes simplex virus-1 and 2 is double-stranded Deoxyribonucleic acid (DNA) viruses from

the Herpesviridae family [3]. HSV-1 is commonly responsible for orofacial infections and is usually transmitted in childhood and adolescence, HSV-2 is more likely to cause genital lesions. Genital herpes may also be caused by HSV-1 [8]. This study reports the results of screening for IgG and IgM antibodies against TORCH in a group of pregnant female patients with bad obstetric history (BOH) by ELISA. Women with fetal congenital malformations caused due to any injuries during pregnancy will be excluded. A positive IgM result for Toxoplasma, Rubella and CMV, may not always indicate a primary acute infection, as IgM has a tendency to persist, even at increase levels, after primary infection. False-positive IgM results may happen due to rheumatoid factor and antinuclear antibodies. Hence, IgG avidity testing is suggested to differentiate between primary infection, IgM persistence and reactivation [7].

2. Materials and Methods

A cross-sectional study was conducted over a period of 4 months on 40 sera samples were collected from department of Microbiology in pregnant female patients with bad obstetrical history attending the outdoor and indoor patient department of Obstetrics & Gynaecology Ward at Integral Institute of Medical Science & Research located at Dasauli, Kursi road, Lucknow by using ELISA.

Study population

Pregnant female patients attending the outdoor and indoor clinic of the department of Obstetrics & Gynaecology at Integral Institute of Medical Science & Research were taken for study.

Inclusion criteria

- 1) Blood sample will be collected from pregnant women with fetal congenital malformation in present pregnancy at Integral Institute of Medical Sciences & Research Lucknow.
- 2) Blood sample will be collected from pregnant women with Bad Obstretic History.

Exclusion criteria

- 1) Women with fetal congenital malformations caused due to any injuries during pregnancy will be excluded.
- 2) Patients not willing to give consent to participate in the study.

Sample Collection

- 1) The blood sample will be collected in clean clot activator vial and the blood will be allowed to stand for 30 minutes to produce clot.
- 2) When blood will be coagulated, then specimen should be centrifuged at 3500 Rpm for 15 min for the separation of serum. When the serum will be separated then TORCH Microlisa will be performed.
- 3) **The ELISA kit (TORCH MICROLISA)** will be taken out from the refrigerator and equilibrate at room temperature.

3. Results

A total number of 40 outdoor and indoor pregnant females with Bad Obstretic History or who came for their first antenatal check-up screened for herpes by using ELISA. Table number 1 shows the distribution of patients according to their age. It was found that maximum patients belonged to age group 26-30 i.e. 35% followed by age group 20-25 i.e. 27.5%, age group 31-36 i.e. 25% and age group belongs to 37-40 i.e. 7.5 % and 41-46 i.e. 5%.

Table 1: Distribution of patients is according to age

Age group (in years)	No of patients
20-25	11
26-30	14
31-36	10
37-40	3
41-46	2
Total	40

Figure 1 shows the distribution of patients according to their residence. It was found that 24 patients belonged to rural areas and 16 patients belonged to urban area

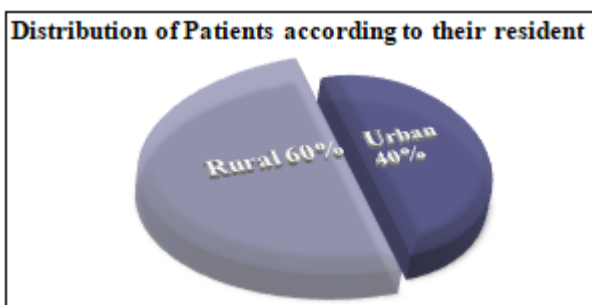


Table number 2 shows the distribution of patients according to their educational status. It was founded that majority of

patients were illiterates (37.5%), ranking up second primary school (25%), preprimary with (17.5%), high school with (15%) and at last graduate and above (5%).

Table 2: Distribution of patients according to their educational status

Educational status	Number of patients
Graduate and above	2
High school	6
Pre primary	7
Primary	10
Illiterate	15
Total	40

Table number 3 shows the distribution of patients according to their BOH condition pregnant with BOH, non pregnant patients with BOH and the patients who came for their first antenatal checkup, they are registered for testing of TORCH by ELISA. Out of 40 majority of patients (42.5%) belonged to non pregnant patients with BOH, followed by (32.5%) patients belonged to pregnant patients with BOH and (25%) patients belonged to patients who came for their first antenatal checkup.

Table 3: Distribution of patient according to their BOH condition

	Number of Patients
Pregnant patients with BOH	13
Non pregnant patients with BOH	17
Patients came for their first antenatal checkup	10
Total	40

Seropositivity of IgG/IgM in Toxoplasma gondii, Rubella, CMV, HSV was 5 (12.5%)/2 (5%), 21 (52.5%)/0 (0%), 13 (32.5%)/0 (0%), 21 (52.5%) /2 (5%) respectively in BOH cases. Table no. 4 shows that in all 40 patients who has TORCH infection or not.

Table 4: Result of ELISA test for TORCH IgG and IgM antibodies in tabular form

	IgG	IgM
Toxoplasma gondaii	5	2
Rubella	21	0
Cytomegalovirus	13	0
Herpes	21	2
Total	40	40

4. Discussion

We conducted the study in IIMS&R, Lucknow and found that the mean age of suspected cases of TORCH in our study was found to be range 26–40 year [Table 1]. Primary infection with TORCH multiplex during pregnant women can lead to adverse outcome which is initially inapparent or asymptomatic and then difficult to diagnose on clinical grounds (Devi KS et al., 2008). A previous study from Delhi showed the prevalence of 11.2% (Kaur R et al., 1999). Other workers from India & abroad have reported 0.7-3.1% seroprevalance (Dar FK et al., 1997, S Adhya et al., 1997). Of the 87 cases, serological evidence for combination of IgM and IgG with any single of the TORCH agents was detected in 12 (13.8%) and IgG alone in 74(85.1%). The IgM/IgG antibody positivity to T. gondii, Rubella, CMV and HSV-2 was 5.8/8.0%, 4.6/91.7%, 9.2/96.4%, and 2.3/5.8%

respectively (Padmavathy M et al., 2013). One – year period 380 serum sample from pregnant women having bad obstetric history, attending antenatal clinic. It was found that, IgM antibodies were positive in 40 (10.52%) for Toxoplasma, 102 (26.8%) for Rubella, 32 (8.42%) for CMV and 14 (3.6%) for HSV-II. IgG antibodies were positive in 160 (42.10%) for Toxoplasma, 233 (61.3%) for Rubella, 346 (91.05%) for CMV 145 (33.58%) for HSV-II (D Turbadkar et al., 2001).

A study from Hyderabad, total of 1,158 HRP women (2010–2013) were considered. She found twenty-five percent of the study group had fetal congenital malformation in the present pregnancy (Group 1; N = 291) while 75 % BOH (Group 2; N = 867). Maternal age of ≤ 25 years, primi gravida, and consanguinity showed predisposing role for Group 1 while maternal age ≥ 30 years and ≥ 3 gravida were contributing risk for Group 2. The seropositivity in HRP women for toxoplasma, rubella, CMV, and HSV was 28, 84, 92, and 61 %, respectively for IgG while it was 6, 3, 4, and 3 % for IgG + IgM. Total seropositivity of toxoplasma, rubella, CMV, and HSV in Group 1 was 29, 97, 97, and 62 % while it was 36, 84, 97, and 65 % in Group 2, respectively (Prasoon K et al., 2014). The serological status of the pregnant women in the present study was compared with socio-demographic variables such as age, education, resident and BOH condition. Out of 40 BOH cases screened for TORCH infection in the present study, 12.5% were positive for Toxoplasma IgG, 52.5% for Rubella IgG, 32.5% for CMV IgG and 52.5% for HSV IgG and IgM was 2 (5%), 0 (0%), 0 (0%), 2 (5%) respectively in BOH cases. Similar seroprevalence has been reported in a previous study from Andhra Pradesh (MS Sadik et al., 2012) suggesting that maternal infection with these pathogens play a critical role during pregnancy wastages and their occurrence in patients with BOH is a significant factor.

5. Conclusion

TORCH infections are associated with recurrent abortion, intrauterine growth retardation, intrauterine death, preterm labor, early neonatal death, and congenital malformation. The purpose of screening for TORCH Infection is not only to identify seropositivity, but to help seropositive people identify symptoms and protect themselves from acquiring other various risk factors and to protect their partners and seronegative people from acquiring TORCH. This study was conducted in the outdoor and Indoor patients visited at IIMS&R, Lucknow in female who came for their normal first antenatal check-up & subsequent antenatal check-up of patients with bad obstetric history included in this study. Of the 40 pregnant women with BOH, We recommend that all antenatal cases with such history should be routinely screened for these agents.

6. Declaration

Financial or Other Competing Interests: None

References

[1] Gangili Sai Spoorthi, Sunkari Naresh Babu (2018),

- Prevalence of Serum Antibodies to Torch Infection in Women with Bad Obstetrics History Attending Tertiary Care Hospital, Journal of Dental and Medical Sciences (IOSR-JDMS) e-ISSN: 2279-0853, p-ISSN: 2279-0861. Volume 17, Issue 8 Ver. 11, PP36-38.
- [2] Turbadkar D, Mathur M, Rele M (2003), The seroprevalence of the TORCH infections in women with bad obstetric histories, Indian J Med Microbiol;21(2):108-10.
- [3] Pizzo Del Jeannine (2011), Congenital Infections (TORCH), official journal of the American Academy of Pediatrics, DOI: 10.1542/pir.32-12- 537.
- [4] Sen M. R, Shukla B. N, Banerjee Tuhina (2012), Prevalance of Serum Antibodies to TORCH Infection in and Around Varanasi, Northern India, Journal of Clinical and Diagnostic Research, Vol-6(9): 1483-1485.
- [5] Fatima Nazish, Sami Hiba, Nabeela, Khan Parvez Anwar, Khan Haris Manzoor (2014), Seroprevalence of TORCH Infection in Patients with Bad Obstetric History in and around Aligarh, Northern India, IJSR - Volume: 3 ISSN No 2277 – 8179.
- [6] Sarkar Munmun Das, Anuradha B., Sharma Neelam, and Roy Rabindra Nath (2012), Seropositivity of Toxoplasmosis in Antenatal Women with Bad Obstetric History in a Tertiary-care Hospital of Andhra Pradesh, India, JHPN Volume 30.
- [7] Karad Dilip, Kharat Arun (2015), Seroprevalence of Torch Infections in Bad Obstetrics History in HIV and Non-HIV Women in Solapur District of Maharashtra India, J Hum Virol Retrovirol 3(1): 00067.
- [8] Amar Omar Ahmed Omar, Bajaj Harish Kumar, Gupta Neena, Singla Ankit, MasihHarison (2015), Prevalence of Herpes Simplex Virus in Pregnant Women from Gangetic Plain Region of Allahabad, India, authors and Scientific Research Publishing Inc., Received 5 May 2015; accepted 4 June 2015; published 8 June 2015.
- [9] Devi KS et al (2008), Seroprevalence of TORCH in women with still birth in RIMS hospital, Journal of Medical Society 22: 2.
- [10] Kaur R et al (1999), Screening for TORCH infections in pregnant women: a report from Delhi, Southeast Asian J Trop Med Public Health (2):284-6.
- [11] Dar FK et al (1997), Gestational and neonatal toxoplasmosis: regional seroprevalence in the United Arab Emirates, Eur J Epidemiol (5):567-71
- [12] S Adhya et al (1996), Toxoplasmosis in Darjeeling, Indian j med microbial, 14(2):89-91.
- [13] Padmavathy M, Mangala Gowri, Malini J, Umapathy BL, Navaneeth BV, Mohit Bhatia, Shruthi Harle (2013), Seroprevalence of TORCH Infections and Adverse Reproductive Outcome in Current Pregnancy with Bad Obstetric History, J Clin Biomed Sci; 3(2).
- [14] Sadik MS, Fatima H, Jamil K, Patil C, (2012), Study of TORCH profile in patients with bad obstetric history, [Biology and Medicine, 4(2):95-101].