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PREVALENCE OF VARIOUS TORCH INFECTIONS AMONG FEMALES OF REPRODUCTIVE AGE GROUP

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ABSTRACT: OBJECTIVES: To check the prevalence of various Torch agents in females of reproductive age group coming to the Gynecology OPD. **METHODS:** This is a retrospective study carried out with the help of ELISA test kits. **RESULTS:** A total of 1545 patients were analyzed, Seropositivity of toxoplasma gondii IgM was 2.73% IgG 5.75%, rubella IgM-5.66% IgG-76.40%. CMV IgM-19.91% IgG 34.905%, HSV IgM-24.84% IgG- 45.801%. **CONCLUSIONS:** The highest prevalence seen was of Rubella IgG. Through the IgG estimation, our study has shown that maximum proportion of the tested patients has been pre exposed and acquired resistance to rubella virus.

KEYWORDS: Prevalence, TORCH Infections.

INTRODUCTION: Etiological agents of various important infections which can be contracted in utero were conveniently grouped together as TORCH where T stands for Toxoplasma, R for Rubella, C for Cytomegalovirus and H for Herpes simplex virus. Most of the torch agents produce syndrome called "Torch Syndrome". It describes those children having congenital infection by one of the several organisms which are clinically indistinguishable.⁽¹⁾ They are distinguished primarily by serological or microbiological investigations.

These pathogens usually produce mild or asymptomatic infections in the mother but may result in congenital malformations and serious sequel in the neonatal period or years after birth. Infections by torch agents in women are usually asymptomatic and chronic.

The social and reproductive maladjustment because of repeated pregnancy wastage, cost of treatment, and morbidity caused to the infant makes the torch group of infections a major cause of concern.⁽²⁾

METHODS: A total of 1545 patients were tested for the TORCH infections. All the sera were collected under aseptic conditions from the patients coming to the Gynecology OPD and IPD of Christian Medical College and Hospital. Sera were labeled and stocked at 2-8 °C upto 7 days or frozen for upto 6 months. The testing procedure was done according to the literature provided with the kits for the particular test. Test kit used was Biotron Diagnostics Inc. Hemet California

RESULTS:

Torch agent	Seropositivity	Seronegativity	Total patients
Toxoplasma IgM	8(2.7%)	285(97.2%)	293
Toxoplasma IgG	9(5.75%)	148(94.8%)	157
Total			450

Table 1: Seroprevalence of Toxoplasma gondii

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Torch agent	Seropositivity	Seronegativity	Total patients
Rubella IgM	12(5.6%)	200(94.3%)	212
Rubella IgG	68(76.4%)	21(23.5%)	89
Total	68	21	301

Table 2: Seroprevalence of Rubella

Torch agent	Seropositivity	Seronegativity	Total patients
CMV IgM	47(20%)	189(80%)	236
CMV IgG	37(34.9%)	69(65.09%)	106
Total			342

Table 3: Seroprevalence of Cytomegalovirus

Torch agent	Seropositivity	Seronegativity	Total patients
HSV IgM	80(24.8%)	242(75.15%)	322
HVS IgG	60(45.8%)	71(54.19%)	131
Total			453

Table 4: Seroprevalence of Herpes simplex virus

Sl. No.	Torch Agents	Seropositivity (Number &%Age)
1.	Rubella IgG& CMV IgG	44(22.5%)
2.	CMV IgG& HSV IgG	18(7.5%)
3.	CMV IgM& HSV IgM	17(2.89%)
4.	Rubella IgG, CMV IgG, HSV IgG	15(4.6%)
5.	Rubella IgG& HSV IgG	10(4.5%)
6.	HSV IgM&IgG	7(1.55%)
7.	CMV IgM&IgG	6(1.75%)
8.	Toxoplasma IgM& HSV IgM	6(0.97%)
9.	Toxoplasma IgG& Rubella IgG	5(2.03%)
10.	Toxoplasma IgM& CMV IgM	5(1.25%)
11.	Rubella IgM& CMV IgM	4(0.89%)
12.	Toxoplasma IgG& CMV IgG	2(0.76%)
13.	Rubella IgM&IgG	2(0.66%)
14.	Rubella IgM, CMV IgM& HSV IgM	1(0.12%)

Table 5: Co-prevalence of Various TORCH agents

Figure 1

DISCUSSION: It is evident that maternal infections play a critical role in pregnancy wastages. Persistence of encysted forms of toxoplasma in chronically infected uteri, and their subsequent rupture during placentation leads to infection of the baby in the first trimester and often to recurrent miscarriages.

Congenital transmission of Toxoplasma is known to occur during acute phase of maternal sera. Seroprevalence of Toxoplasma IgM was (2.7%) which is very less as compared to the 11.6% infection observed by Kaur et al (1999) in New Delhi.⁽³⁾ The Seroprevalence of Toxoplasma IgG was 9 (5.75%) a little higher than that of Seroprevalence of IgM. A total of 200 pregnant women were recruited in this cross-sectional study. The overall seroprevalence of toxoplasmosis in pregnant women was found to be 49%, in which 39%, 4% and 6% for anti-Toxoplasma IgG, IgM and both anti-Toxoplasma IgG and IgM antibodies, respectively.

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This study showed that the prevalence of toxoplasma in our study was very less as compared to the study done by Nissapatorn V, Noor Azmi MA, Cho SM, Fong MY, Init I, Rohela M, KhairulAnuar A, Quek KF, Latt HM.⁽⁴⁾

More than 60 million people in the United States probably are infected with the *Toxoplasma* parasite, but very few have symptoms because the immune system usually keeps the parasite from causing illness. (Source: excerpt from *Toxoplasmosis: DPD*).

Seroprevalence in the general population in persons over 12 years of age was estimated to be 22.5% in one North American study performed from 1988-1994. Worldwide, Seroprevalence ranges from 0-100% depending on country, geographic area and even ethnic group.

Between 40 to 400 children born in Canada each year are infected with *Toxoplasma* before birth.

Toxoplasmosis is caused by the protozoan parasite *Toxoplasma gondii*. A recent serologic survey conducted as part of the Third National Health and Nutrition Survey found that 23 percent of adolescents and adults and 15 percent of women of child-bearing age in the United States show laboratory evidence of *T.gondi* infection.

Rubella is a mild viral illness in children but can occasionally infect adults. Primary virus infection during pregnancy may cause fetal damage. Our study revealed the IgM infection to be 12(5.6%) whereas IgG prevalence was very high as compared to IgM i.e. 68(76.4%). Through the IgG estimation, our study has shown that maximum proportion of the tested patients have been pre exposed and acquired resistance to Rubella virus, which is in agreement with the corresponding rates of 93.3%(Ghazi et al.2002)⁽⁵⁾ 89.9%(Ustacelebi et al., 1986)⁽⁶⁾ and 97.2%(Rodier et al., 1995)⁽⁷⁾

As Rubella, CMV also is very significant in the miscarriage cases. Here CMV IgM Seroprevalence was (20%) which is quite high as compared to Hao Z.Y. et al 1.1%. Positive IgM results to Cytomegalovirus (CMV) are indicative of a primary or recurrent infection. IgM antibodies to CMV can persist for 2 to 9 months after the initial infection. Not all patients with reactivated CMV infection will have detectable levels of IgM antibodies. Positive IgM results in neonate have a high probability of being an indication of congenital or neonatal infection.

The CMV IgG Sero-prevalence was higher as compared to the IgM prevalence i.e. 37 (34.9%). Positive IgG results, in the absence of IgM antibodies, most often are indicative of past Cytomegalovirus (CMV) infection and do not necessarily assure protection from future infection with CMV. Positive CMV titers from maternal antibody can persist in neonates for up to 6 months. Negative results indicate no significant level of detectable antibodies to CMV. In neonates, a negative result may help to exclude congenital infection. Since a single specimen cannot determine a recent infection, paired specimens, acute and convalescent, should be tested concurrently to demonstrate sero-conversion.

Herpes simplex virus type 1 (HSV-1) is usually transmitted during childhood via non-sexual contacts. However, HSV-1 has emerged as a principle causative agent of genital herpes in some developed countries.⁽⁸⁾ Xu F, Sternberg MR, Kottiri BJ, McQuillan GM, Lee FK, Nahmias AJ, Berman SM, Markowitz LE: Trends in herpes simplex virus type 1 and type 2 seroprevalence in the United States.

HSV 1 infections usually occur through non-genital sources (Sullivan-Bolyai et al, 1983).⁽⁹⁾ Despite the higher risk of HSV from mothers experiencing first episode of genital disease, most neonates (70%) are infected because of viral shedding and undiagnosed disease (Bhughra et al.1997).⁽¹⁰⁾

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In our study the Seropositivity of HSV IgG infection is much higher than that of others i.e. 60(45.8%) whereas HSV IgM infection is just 24.8%. Other studies have reported Seroprevalence of HSV 1 to be 48 to 50% (Bhrugha et al.1997).Which is quite similar to our study. For the overall study population, we found that 62% were seropositive for HSV type 1(HSV-1), done by Susan L. Rosenthal, Lawrence R. Stanberry, Frank M. Biro, Moncef Slaoui, Myriam Francotte, Marguerite Koutsoukos, Marianne Hayes, and David I⁽¹¹⁾. Bernstein in Seroprevalence of Herpes Simplex Virus Types 1 and 2 and Cytomegalovirus in Adolescents is quite higher than our Seroprevalence of HSV.

In another Seroprevalence study done by A. J. Alzahrani⁽¹²⁾ O. E. Obeid, A. A. Almulhim ABObGyne, Jordanian Board ObGyne, B. Awari, Atya Taha, Feryal. Al-Ajmi, Hatim K. Al-Turkistani concluded that HSV1 IgM prevalence was 0.5% which was very less as compared to our prevalence study and HSV 1 IgG prevalence was just 6.5% which was also very less as compared to our prevalence observations.

So hence it can be concluded that Because both HSV-1 and HSV-2 can infect pregnant women and their neonates, assessment of HSV infection in pregnant women and neonates will help in proper management of HSV infection and will also be useful for epidemiological.

CONCLUSION: TORCH infections, are some of the most common infections associated with congenital anomalies. These infections are associated with recurrent abortion, intrauterine death, preterm labor, early neonatal death, and congenital malformations.

Therefore, recognition of maternal disease and fetal monitoring once disease is recognized are important for all clinicians. Knowledge of these diseases will help the clinician appropriately counsel mothers on preventive measures to avoid these infections, and will aid in counseling parents on the potential for adverse fetal outcomes when these infections are present.

Previous history of pregnancy wastages and positive serological reactions during the current pregnancy helps management of these cases in order to reduce adverse fetal outcomes.

We recommend that all antenatal cases with BOH be routinely screened for TORCH complex as early diagnosis and appropriate intervention of these infections will help in proper management of these cases.

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