Original Article

Seroprevalence of TORCH infections in antenatal and HIV positive patient populations

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ABSTRACT

Background: The TORCH (Toxoplasma gondii, Rubella, Cytomegalovirus (CMV) and the Herpes Simplex Virus) cause range of diseases in pregnant women and HIV patients and lead to adverse fetal outcomes when not treated on time, in HIV positive can cause life threating infections. There is inadequate data available of these infections in India.

Methods: A retrospective study was undertaken to determine the seroprevalence of the TORCH infections in antenatal and HIV/AIDS patients at a tertiary care centre. The laboratory data pertaining to the period Jan 2012–May 2014 was analyzed. The study population involved 162 antenatal cases and 729 HIV/AIDS patients under review at an ART centre. Laboratory testing was done for the presence of IgM and IgG antibodies against the TORCH infections by ELISA method.

Results: Among the antenatal cases, 30 (18.52%) samples were found to be seropositive for Toxoplasma IgM, CMV IgM antibodies were found in 47 (29.01%) samples, HSV IgM antibodies were found in 12 (7.40%) samples, Rubella IgM antibodies were found in 13 (8.02%) samples, indicating recent infection. Among the HIV/AIDS cases, indicative of recent or current infection, 160 (21.94%) samples were positive for Toxoplasma IgM, CMV IgM was found in 99 (13.58%), HSV IgM antibodies were found in 98 (13.44%) and Rubella IgM in 47 (6.44%).

Conclusions: The study showed a high seroprevalence of the infections caused by the TORCH complex amongst pregnant women and HIV/AIDS patients despite improved hygiene conditions and health awareness. Maximum seroprevalence for CMV was observed followed by Rubella and HSV infection.

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Introduction

TORCH, which includes Toxoplasmosis, Rubella, Cytomegalovirus (CMV), and Herpes infection are grouped together because they may result in similar clinical and pathological manifestations and lead to latent infections and recurrence of diseases whenever immunity is lowered.

Perinatal infections account for 2%–3% of all congenital anomalies. TORCH infections, are some of the most common infections associated with congenital anomalies. Most of the TORCH infections cause mild maternal morbidity but have serious fetal consequences and treatment of maternal infection frequently has no impact on fetal outcome. Therefore, recognition of maternal disease and fetal monitoring once disease is recognized are important for all clinicians. The 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.[1]

Toxoplasmosis, CMV and HSV infections are also very frequent in HIV positive patients with progressively lowered immunity and require to be diagnosed as such at an early stage. Hence treating physicians are to investigate the patients accordingly to modify their treatment regimens and prophylaxis as required. From the healthcare provider safety perspective, TORCH infections in pregnant women are also a hazard to attending nurses.[2]

The diagnosis of these infections depends mainly on serology as these are initially asymptomatic or causes minor illness in healthy individuals and are difficult to diagnose clinically. The detection of the IgM and IgG antibodies against TORCH is currently the best approach for the identification of these infections. Diagnosis can also be done by using various molecular techniques. PCR based methods have actually revolutionized the approach to diagnose, manage and later on to follow up the cases. There is a not much current data regarding TORCH infections during pregnancy and in patients with HIV infection. This study was undertaken to detect the seroprevalence of TORCH infections in two population groups, viz pregnant women with BOH and HIV positive patients, by detection of the IgM and IgG antibodies. These two groups were considered of interest as the highest seroprevalence has been noted to be in these discrete populations. Further periodic analysis of seroprevalence is necessary for cost effective management of these cases.

Materials and methods

At the laboratory of a tertiary care hospital, over a two and a half year period, subsets of 891 sera samples collected from patients for the detection of the IgM and IgG for TORCH and were analyzed qualitatively by commercially available ELISA kits. 162 samples belonged to antenatal cases being screened for TORCH and 729 to HIV/AIDS cases. The study population included pregnant women who were in the first trimester of their pregnancy and had BOH. All the confirmed HIV positive patients were under follow up in the STD Clinic and were under review by a physician.

The sera were assayed according to the manufacturer's instructions and the results were calculated on the basis of the cut off Activity Index (AI). Results are presented as positive or negative for the antibody, indicating the presence or absence of IgG and IgM antibodies. Presence of IgM antibodies indicates a current or recent infection and presence of IgG antibodies indicates past infection. We did not use kits to differentiate between HSV Type I and II, as this was a screening test. No antibody titration was done for anti-toxoplasma antibody.

Results

Results obtained are presented in Figs. 1 and 2. All the tests have been evaluated against the reference range in the reports of the laboratory. The normal result would be normal levels of IgM antibody in the serum samples.

Among the antenatal cases, 30 (18.52%) samples were found to be seropositive for Toxoplasma IgM, CMV IgM antibodies were found in 47 (29.01%) samples, HSV IgM antibodies were found in 12 (7.40%) samples, Rubella IgM antibodies were found in 13 (8.02%) samples, indicating recent infection.

Among the HIV/AIDS cases, indicative of recent or current infection, 160 (21.94%) samples were positive for Toxoplasma IgM, CMV IgM was found in 99 (13.58%), HSV IgM antibodies were found in 98 (13.44%) and Rubella IgM in 47 (6.44%).

Discussion

Pregnant women and immunocompromised patients are the two major risk groups affected by the TORCH infections. TORCH infection in pregnancy does not harm the patient but affects the outcome of the pregnancy leading to BOH. Infections caused by TORCH are considered to be a major cause of BOH. The incidence of preterm deliveries, and congenital malformation has been reported to be more in patients with Toxoplasma positive titers, while the incidence of spontaneous abortion has been reported to be more in patients with Rubella, CMV, and HSV-positive titers.[3] Sero-epidemiological
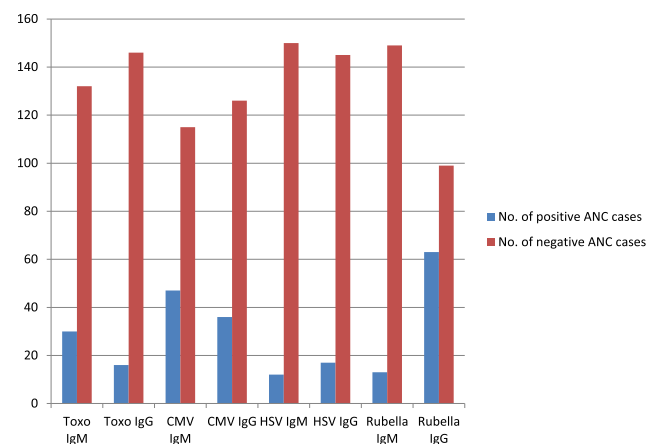

Fig. 1 – Seroprevalence of TORCH in antenatal cases (n = 162).