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Original article:

Study of spectrum of TORCH infection in early infancy leading to Failure to thrive

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Abstract:

Introduction: The acute infections which are caused by *Toxoplasma gondii*, Rubella virus, Cytomegalovirus (CMV) and the Herpes Simplex Virus (HSV-2) during pregnancy are often associated with adverse foetal outcomes and reproductive failures. In the Indian context, the exact seroprevalence of these infections is not known due to unavailability of baseline data. The present study was planned to assess the spectrum of TORCH cases in our hospital.

Material and methods: The present study was carried in Department of Pediatrics for nine months duration. It was an observational study. In this study we included 12 cases of TORCH cases . Demographic profile & clinical features were assessed and compiled. In this study we included the cases admitted in our hospital in infancy without any complications. The study was completed with all data tabulated and analyzed.

Results: In our study, out of total of 12 cases , 2 were found to be seropositive for *Toxoplasma*, 3 samples were positive for Rubella, 3 samples were positive for CMV and 4 samples were positive for the HSV-2 infections. The average age of the study population was 4 months. Commonly we found weight pattern was affected with affecting overall growth pattern. Liver Function test and renal functions were also affected . Average HB count was found 7.8 gm%. Feeding was affected in all cases. In our study Liver function test & renal function test were carried out and found to be affected in 7 cases more severally than others. On sensivity ground all cases were found positive for I_GG & I_GM .

Conclusion: From this study, we may conclude that, TORCH infections are associated with recurrent abortion, intrauterine growth retardation, intrauterine death, preterm labor, early neonatal death,congenital malformation and failure to thrive. Previous history of pregnancy wastages and positive serological reactions during the current pregnancy helps management of these cases in order to reduce adverse fetal outcome.

Introduction:

The acute infections which are caused by *Toxoplasma gondii*, Rubella virus, Cytomegalovirus (CMV) and the Herpes Simplex Virus (HSV-2) during pregnancy are often associated with adverse foetal outcomes and reproductive failures. In the Indian context, the exact seroprevalence of these infections is not known due to unavailability of baseline data.[1] The clinical importance of early diagnosis of congenital neonatal infections and initiation of early therapy was recognized more than half a century ago. As a result, a serology screening panel was established for Toxoplasma gondii, rubella virus, cytomegalovirus, and herpes simplex virus ("TORCH") that is still widely used in many institutions. Although it no longer is possible to diagnose all recognized congenital infections

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with one panel, the original TORCH diseases continue to be of clinical importance, and advances in medicine and new findings in epidemiology, preventive medicine, developmental biology, and immunology have brought optimistic changes and intriguing insights to the field. [2] Infections acquired in utero or during the birth process are a significant cause of fetal and neonatal mortality and an important contributor to early and later childhood morbidity. The infected newborn infant may show abnormal growth, developmental anomalies, or multiple clinical and laboratory abnormalities .The original concept of the TORCH perinatal infections was to group five infections with similar presentations, including rash and ocular findings.[3]

Material and methods:

The present study was carried in Department of Pediatrics for nine months duration. It was an observational study. In this study we included 12 cases of TORCH cases . Demographic profile & clinical features were assessed and compiled.

In this study we included the cases admitted in our hospital in infancy without any complications.

The study was completed with all data tabulated and analyzed.

Detail questionnaire was prepared to collect information.

Results:

Table 1) Distribution of Presentation of infections in our cases

S.NO.	Seropositivity	Number of cases (N =12)
1	Toxoplasma	2
2	Rubella	3
3	CMV	3
4	HERPES + HSV-2	4

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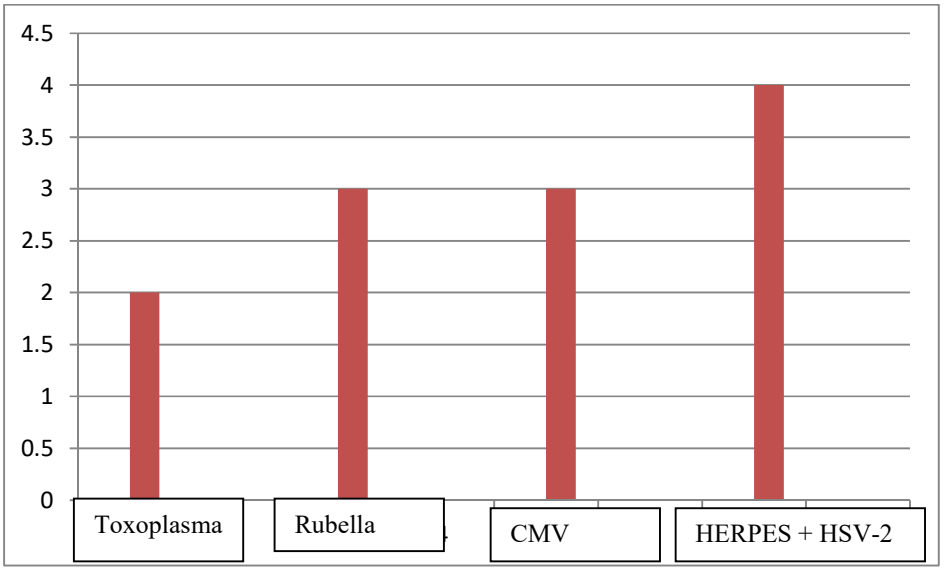

Graph 1) Distribution of Presentation of infections in our cases

In our study, out of total of 12 cases , 2 were found to be seropositive for *Toxoplasma*, 3 samples were positive for Rubella, 3 samples were positive for CMV and 4samples were positive for the HSV-2 infections.

The average age of the study population was 4 months.

Mixed infections were seen in 4 out of the 12 positive cases for the Toxoplasma IgM antibodies, as has been shown in .

Table 2) Clinical presentation of cases

S.NO.	Clinical Profile	Observations in number of cases
1	Vomiting	Observed in 7 cases
2	Weight – affected	Affected in 11 cases
3	Feeding pattern	Breast feeding in 9 cases
4	Length – <3rd percentile	11 cases
5	Head circumference – <3rd percentile	10 cases
6	Jaundice	7 cases
7	Anemia	7 cases
8	Fever & cough	7 cases

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Commonly we found weight pattern was affected with affecting overall growth pattern.

Liver Function test and renal functions were also affected . Average HB count was found 7.8 gm%.

Feeding was affected in all cases.

Table 3) Clinical manifestations presentation in TORCH cases:

INFECTION	CLINICAL MANIFESTATIONS	SITE OF ISOLATION OF ORGANISM
Toxoplasma	• Chorioretinitis • Meningoencephalitis • Hepatitis • Thrombocytopenia	• CSF
Others (Hepatitis B)	• Hepatitis	• Blood for Au antigen
Rubella	• Small for date • Cardiac malformation • Cataract • Deafness • Hepatitis • Thrombocytopenia • Anemia • Metaphyseal lesions in bones	• Throat swab • CSF • Urine
Cytomegalovirus	• Small for date • Chorioretinitis • Meningoencephalitis • Microcephaly • Periventricular calcification • Hepatitis • Thrombocytopenia	• Freshly voided urine
Herpes	• Congenital varicella • Congenital herpes zoster	• Vesicles

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Table4) Investigation profile of TORCH cases

S.NO.	TORCH Cases	HB (mg %)	TLC	PCV	PC
1	**T**oxoplasma	9.8	9800	42.11	218
2	**O**thers (Hepatitis B)	10.12	17500	24.98	350
3	**R**ubella	7.23	21050	22.21	412
4	**C**ytomegalovirus	8.02	16200	29	92
5	**H**erpes	7.55	11364	34.74	176

In our study Liver function test & renal function test were carried out and found to be affected in 7 cases more severally than others. On sensivity ground all cases were found positive for I_GG & I_GM .

Photograph: Showing clinical presentation of TORCH cases.

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Discussion:

The maternal infections that are transmissible in utero at several stages of the pregnancy, can be caused by many organisms, of which the members of the TORCH complex, namely *Toxoplasma gondii*, Rubella virus, Cytomegalovirus (CMV), the Herpes Simplex Virus (HSV) occupy prominent positions. These infections are associated with inadvertent outcomes like multiple abortions, sterility, intrauterine foetal deaths, still births, congenital malformations and other reproductive failures, especially when they are acquired during the first trimester of the pregnancy. [5]Since these maternal infections are initially asymptomatic and as the clinical diagnoses are unreliable, the diagnoses of these infections depend on serological evidences. The detection of the IgM antibody against TORCH is the best approach for the identification of these infections [1]. Due to the lack of a national screening programme, there is no baseline serological data regarding the presence of an antibody in the TORCH infection during pregnancy.[6]

Failure to thrive early in life is concerning because maximal post natal braingrowth occurs in first 6 months of life. Microcephaly reflects failure of brain growth. Early detection may provide a window opportunity for intervention not only in physical growth but also in cognitive and behavioural development. Hence, for all pre-conceptual cases TORCH screening is ideally advised, but in practice antenatal screening for high risk mothers i.e. with previous miscarriages, abortions, neonatal deaths and affected neonates with TORCH can go a long way in reducing the burden of this debilitating infection.[3]

It is evident that maternal infections play a critical role in pregnancy wastage and their occurrence in patients with BOH is a significant factor. Persistence of encysted forms of toxoplasma in chronically infected uteri, and their subsequent rupture during placentation lead to infection of the baby in the first trimester and often to recurrent miscarriages [5] . In the study T. gondii, which is a known etiological agent in recurrent pregnancy wastage was found in 14.66% pregnant women with BOH. This is similar to what has been reported earlier is [6,7.]

Congenital transmission of toxoplasma is known to occur during the acute phase of maternal infection and the IgM antibodies are evaluated in the maternal sera [8] . IgM antibodies were found in 27.27% of cases with recurrent abortions compared with 12% in Bhatia et al's [9] study. Rubella is a mild viral illness in children but can occasionally infect adults. Primary virus infection during pregnancy may cause fetal damage. In our study seropositivity for rubella was found more while other workers report seropositivity ranging from 4 to 17.77% [10,11]. Both CMV and HSV are known to have an intrauterine route of transmission with significant mortality and morbidity [12,13]. The present study shows seropositivity rate of higher for CMV specific IgM in women with BOH. In other studies seropositivity ranges from 3 to 12.9% [14,15]. It was suggested that pregnancy may reactivate the latent virus leading to further reproductive wastages.

Conclusion:

From this study, we may conclude that, TORCH infections are associated with recurrent abortion, intrauterine growth retardation, intrauterine death, preterm labor, early neonatal death, congenital malformation and failure to thrive.

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

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