MATERIAL TOXOPLASMOSIS OBSTETRIC OUTCOME

by

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Introduction

Toxoplasmosis is a disease which occurs in acquired and congenital forms. In recent years, the literature has become replete with reports of this disease, the mode of pathogenesis, serology of infection and isolation of the parasites. The obstetrician is especially interested in this disease because of the association of latent maternal toxoplasmosis with intrauterine fetal damage.

Toxoplasmosis manifests in different forms in the newborn. The studies of Remington *et al* (1964) and Jones *et al* (1966) have proved a significant correlation of the abnormal outcome of pregnancy in form of premature labour, stillbirth and neonatal death with a high toxoplasma antibody titre in the mother. In contrast to this Holmdahl (1953) and Eckerling *et al* (1968) did not report any correlation between maternal toxoplasmosis and reproductive disorders.

Keeping in mind the above controversies, the present study was undertaken as to find if toxoplasmosis has any definite relation with premature labour, stillbirth and neonatal death.

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Methods and Material

Sera from 38 study cases which included 22 cases of premature labour, 11 cases of stillbirth and 5 cases of neonatal deaths from patients admitted to obstetric unit or attending the antenatal clinic of Irwin Hospital, New Delhi and also 75 control cases with good obstetric history were tested against toxoplasma infection by indirect haemagglutination test (Prakash, 1966) and by Dye test (Sabin *et al*, 1952).

The sera were stored at—20°C at all times except when in use. Considering difference in opinion regarding significant titre in the published reports, the data in the present study have been expressed in the form of titre exceeding 1:8, 1:32 and 1:128. This has been done with an aim that a better comparison of the results can be made with data of the authors who have expressed their results as incidence calculated on the basis of the significant titre which was 1:16, 1:64 or 1:200 in different studies.

Results with Observation

The titres of haemagglutination and dye test antibodies amongst study cases and healthy control have shown in Table I. By haemagglutination test, 61.8 per cent sera from study cases and 17.3 per cent sera from control cases showed presence of anti-toxoplasma antibodies in the titres exceeding 1:8, 43.6 per cent from the study cases and 1.3 per cent from the

control cases showed titre higher than 1:32 and 11.6 per cent of the study cases had titres more than 1:128 while none from control cases.

By dye test, 58.8 per cent sera from study cases and 13.3 per cent sera from control women showed presence of anti-toxoplasma antibodies in a titre higher than 1:8. But 42.1 per cent of the study cases showed titres higher than 1:32 and 8.2 per cent of the study cases had higher titres more than 1:128, while none from control group shows antibodies with these titres (Table I).

Table II compares antibody titres in cases with Premature labour, stillbirths and neonatal deaths. By haemagglutination tests 72.7 per cent, 45.4 per cent and 4.5 per cent cases with premature labour, and 72.7 per cent, 45.4 per cent and 9.0 per cent cases with stillbirth showed respectively the titres exceeding 1:8, 1:32 and 1:128. With the same test 40.0 per cent, and 20.0 per cent cases with neonatal death showed titre exceeding 1:8, 1:32 and 1:128 respectively.

With dye test 63.6 per cent, 31.8 per cent and 4.5 per cent cases with premature labour and 40.0 per cent, 40.0 per cent and 20.0 per cent cases with neonatal deaths showed titres exceeding 1:8, 1.32 and 1:128 respectively. While 72.7 per cent and 54.5 per cent, cases with stillbirths showed respectively the titres exceeding 1:8 and 1:32.

Discussion

Toxoplasmosis and Premature Labour

Frenkel and Friedlander (1951) concluded from their study that premature births are common among women whose sera are positive against toxoplasmosis than in the general population. Chech and Jirovec (1960) stated that the parasite in the infected mother causes repeated premature births. Contrary to the above, the study of Eckerling *et al* (1968) did not support the view that the most common abnormality of pregnancy in toxoplasmosis is premature labour.

In the present study, however, out of total 22 cases of premature labour, only 10 (45.4%) cases showed titres of 1:64 or above by haemagglutination and 7 (31.8%) cases by dye test. Higher titre of 1:256 and above was found only in 1 (4.5%) cases by both tests (Table II). One patient from premature labour showed rising titre both by haemagglutination and dye test.

Toxoplasmosis and Stillbirths

Langer (1963) incriminated maternal toxoplasmosis as an outstanding cause for stillbirth by isolating toxoplasma gondii from the brain of 2 successive stillborn children. According to the reports of Ekerling *et al* (1968), 40 patient with positive serology against toxoplasmosis, 8 (20%) cases terminated in stillbirths.

In the present study of 11 cases of stillbirth, mothers showed positive sera against toxoplasmosis in 5 (45.4%) cases by haemagglutination test and in 6 (54.5%) cases by dye test at titre of 1:64 and above. Higher titre (1:256 and above) was present only in 1 (9.0%) case by haemogglutination test (Table II).

Toxoplasmosis and Neonatal Deaths

Remington *et al* (1964) reported an incidence of 29 per cent positive dye test in 113 women with bad obstetrical history, including neonatal death. Eckerling *et al* (1968) reported that 9 (22.5%) cases out of 40 mothers with bad obstetrical history resulted in post-partum death of the infants. However, Roszkowski and Prawecka (1966) on their study on 1108 mothers with bad obstetrical history found

TABLE I

Comparison of Antibody Titres in Study and Control Cases

Group No.	Type of cases	Total No. of cases	HAEMAGGLUTINATION TEST						DYE TEST					
			HAEMAGGLUTINATION TEST			PERCENTAGE POSITIVE			DYE TEST TITRES			PERCENTAGE POSITIVE		
			1:16 to 1:32	1:64 to 1:128	1:256 and above	1:16 and above	1:64 and above	1:256 and above	1:16 to 1:128	1:64 to 1:128	1:256 and above	1:16 and above	1:64 and above	1:256 and above
I	Study	38	9	14	3	61.8	43.6	11.2	9	13	2	58.8	42.1	8.2
II	Control	75	12	1	—	17.3	1.3	—	10	—	—	13.3	—	—

TABLE II

Comparison of Antibody Titres in Premature Labour, Stillbirths and Neonatal Deaths

Group No.	Type of cases	Total No. of cases	HAEMAGGLUTINATION TEST						DYE TEST					
			HAEMAGGLUTINATION TITRES			PERCENTAGE POSITIVE			DYE TEST TITRES			PERCENTAGE POSITIVE		
			1:16 to 1:132	1:64 to 1:128	1:256 and above	1:16 and above	1:64 and above	1:256 and above	1:16 to 1:32	1:64 to 1:128	1:256 and above	1:16 and above	1:64 and above	1:256 and above
I	Premature Labour	22	6	9	1	72.7	45.4	4.5	7	6	1	63.6	31.8	4.5
II	Stillbirths	11	3	4	1	72.7	45.4	9.0	2	6	—	72.7	54.5	—
III	Neonatal* Deaths	5	—	1	1	40.0	40.0	20.0	—	1	1	40.0	40.0	20.0

* Neonatal deaths within 1st week of birth.

a very poor correlation between toxoplasmosis and neonatal death.

In the present study there were only 5 cases of neonatal deaths out of which only 2 (40.0%) cases showed a titre of 1:64 and above in both cases. However, 1 (10.00%) case from them showed a higher titre (1:256 and above) by both tests.

Conclusion

Sera from 38 study cases which included 22 cases of premature labour, 11 cases of stillbirth and 5 cases of neonatal deaths and also from 75 control cases were tested against maternal toxoplasmosis by indirect haemagglutination test and dye tests. The results of the study are discussed. Keeping difference of opinion regarding significant titre in the published reports, the data in the present study are expressed in the form of titres exceeding 1:8, 1:32 and 1:128.

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