TOXOPLASMA AS AN AETIOLOGICAL FACTOR IN ABORTIONS AND STILL-BIRTHS

by

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Though Nicolle and Manceaux described Toxoplasma Gondii in 1908, it was not until 1939 that Wolf, Cowen and Paige proved by isolating the parasite from human cases that it caused congenital disease in man. Occurrence of antibodies in the various population groups indicates that man is frequently exposed to this infection. Percentage positive in different surveys varies from 6-94% (Wright 1957), Rawal and Jhala, from Bombay, found skin test positive only in 3%.

Congenital toxoplasmosis may simulate haemolytic disease of the new-born (Bain *et al* 1956) or as stated by Feldman and Miller (1956) and Feldman (1958), it may cause hydrocephaly in 22% of cases, microcephaly in a further 21%, and a high incidence of malformations. Sabin (1940) described a syndrome of hydrocephaly, microcephaly, chorioretinitis, convulsions, or other neurological signs and cerebral calcifications. Commonest manifestation is chorioretinitis of which 20-35% is due to toxoplasma infection which is mostly congenital (Beverley *et al* 1958, Smith and Ashton, Jacobs *et al* 1956, Parkin and Beverley 1958). The particular danger is development of toxoplasmosis during pregnancy, because infection may be passed to the foetus. Robertson (1960) has reported excessive perinatal mortality associated with toxoplasmosis. As a rule the mother's infection passes unnoticed, but Couvreur (1955) on a careful enquiry found evidence of illness in 17 of 20 mothers. In 7 it was asthenia and in 6 lymphadenopathy. Farquhar (1950) also noted lymphadenopathy in a woman who gave birth to a child with congenital toxoplasmosis. Alexander and Callister (1955) and Siim (1956 b) have found toxoplasmosis in both mother and child.

When maternal infection occurs in the first trimester of pregnancy, foetus may escape infection as reported by Gard and Magnuson (1951), Stanton and Pinkerton (1953) and Holmdahl (1953), though not necessarily so, as reported by Siim (1956

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a) and Becket and Flynn (1953). It is thought, however, that for still-birth to result the infection must have taken place at least a month prior to delivery (Robertson 1960).

There have been controversial reports as regards the extent to which toxoplasma causes abortion, still-birth and congenital toxoplasmosis. Holmdahl (1953), from his survey in Goteberg, concluded that it did not reveal any significantly greater proportion of antibody carriers among women whose pregnancies resulted in abortion or intrauterine foetal death, neonatal mortality or defectively developed child. Sabin *et al* (1952) reported that of 45 mothers, who had given birth to children with congenital toxoplasmosis, there were no cases of congenital toxoplasmosis in 67 subsequent pregnancies. This information has often been quoted to show that of those mothers, whose babies have congenital toxoplasmosis, their subsequent offsprings will not have congenital toxoplasmosis. These authors, on the basis of high dye test and C.F.T. titres, stated that congenital toxoplasmosis is the result of an occurrence of an unrecognized primary infection rather than exacerbation of a chronic infection during pregnancy. More recently work of Langer (1963) suggests that it is possible that in low grade constant toxoplasmic infection, gestation is halted early with poor immunity, with occurrence of abortion later, while acute primary infection by toxoplasmosis in pregnancy, at times unrecognized results in congenital toxoplasmosis with good immunity and no recurrence *(Pullen 1965)*.

As there is wide variation in the incidence of toxoplasmosis in different countries (Wright 1957) and its variable effects on pregnancy, the present study is being conducted to assess the degree of foetal wastage caused by this parasite, among the patients attending the Gynaecological and Antenatal clinics of the All-India Institute of Medical Sciences Hospital. The study is still in progress and this is only a preliminary report.

Present Study

Patients with history of abortions or still-birth were included in the study group A. Patients with one or more normal children with no abortions were studied as control group B. The study group presently consists of 90 patients who were between 17-38 years old and had had 1-9 abortions or still-births. All these patients were also submitted to investigations to exclude other aetiological factors, like syphilis, diabetes, Rh incompatibility, chronic nephritis and thyroid disease. In addition Haemagglutination (HA) test (Jacob and Lunde 1957) was done. This test is relatively simple and does not involve use of the live parasites which are required in the dye test (Sabin and Feldman 1948). Thus there is little risk of laboratory workers contacting the infection. It also does not involve microscopic reading of the test, hence considerable labour is saved. Lunde and Jacobs (1963) also found good agreement between the two tests. Adequacy of the test has been further confirmed by Chordi *et al* (1964). Hence, in this study Haemagglutination test has been used as a convenient and reli-

able laboratory criterion for screening the patients for Toxoplasmosis.

Results:

In 17 out of 90 patients in study group A, this test was positive in dilutions varying 1/6—1/4096 as against 2 positive reactions in the control group B of 27 patients. (Table I).

Result of Haemagglutination test

	Total No. of cases.	Negative	Positive				
			1/16	1/64	1/256	1024	4096
Study Group A.	90	73	5	6	2	3	1
Control Group B.	27	26	0	0	1	1	0

In the study group two patients were Rh negative but neither of them had antibodies, and in one of them, who had had two abortions, HA test was positive in 1/16 dilutions. There was only one patient in the study group who had positive serology for syphilis but her HA test was negative.

Five patients in the study group with positive HA test, received treatment. Two patients who had had three abortions each and had HA test positive 1:1024 were treated with spiramycin 250 mgm. 4 hourly for 10 days. In both cases the pregnancy ended in a normal term delivery with a live baby. One patient who had one abortion and one still-birth, has had sulphaphenazole (Orisul) 2 gm/day for 10 days, and is at present in the 8th month of pregnancy. Two more, patients who had had 3 and 9 abortions each and had positive HA test, have been treated with sulphaphenazole, but have not yet conceived again so far.

Attempts at isolation of parasite by inoculation of mice with lochia and aborted material upto eight passages, are in progress.

Summary & Conclusion:

Ninety patients with history of abortions and still-birth were screened for toxoplasmosis by Haemagglutination test and in 17 (19%) the test was positive.

Among twenty-seven patients in the control group, two (7%) tests were also positive.

In the control group it is suggested that the patient had been exposed to infection some time or the other, but did not perhaps have any cysts in the uterus to cause abortions or still-births.

It appears that this simple test may uncover an aetiological factor in cases of abortions and still-births where other causes have been eliminated.

Literature on the subject is reviewed.

A larger number of cases for more definite conclusions is under study.

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