TOXOPLASMOSIS AND PREGNANCY WASTAGE

SURINDER KAUR SANDHU ● JASPAL SINGH ● HARPREET MANN ● HARLEEN KAUR

SUMMARY

A study has been conducted on 200 pregnant patients 100 each belonging to previous bad obstetrical history (Group I) and controls (Group II). IgG and IgM testing for toxoplasmosis by ELISA technique was done. The present pregnancy foetal outcome was noted. 22% cases in group I were seropositive as compared to 8% in group II. Pregnancy wastage in present pregnancy in group I seropositive cases as compared to seronegative cases was statistically significant (Z = 5.83).

INTRODUCTION

There are controversial reports as regards the extent to which toxoplasma causes foetal wastage. Sabin et al (1952) Holmdahl (1953), Gronroos (1955) concluded that chronic toxoplasmosis is an unimportant cause of human abortions. On the other hand, other authors - Faure (1953), Robertson (1960), Chech and Jirovec (1960), Hendenstrom (cited by Ramington, 1964), Atial and Saavedra (1966), Hingorani et al (1970), Sharf et al (1973), Mahajan et al (1976), Saini et al (1984), Maya Natu (1988, 1989), Swaran Kanta and Kasturi (1990). Ajay A. Mehta and Mehta (1990) and Dacosta et al, (1991) found higher incidence of positive serology in women with foetal wastage. In expectant mother, the disease occurs as a result of eating contaminated food or by reactivation of chronic infection due to immuno-suppression of pregnancy. Acquired toxoplasmosis in pregnancy is usually asymptomatic. Infection of the placenta is an obligatory step between maternal and foetal infection (Remington et al, 1964).

The consequences of infection in the first trimester are more serious and include a threat to the foetus with

Dept. of Obst. & Gyn. Medical College, Amritsar.
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possible and spontaneous abortions, prematurity, still birth, congenital anomalies or overt clinical disease with chorioretinitis, hydrocephaly, intracerebral calcification, hepatomegaly and growth retardation. In contrast more than 90% of foetal infections acquired in the third trimester are asymptomatic at birth. Such infants may suffer no untoward sequelae of infection or may go on to develop retinochorioditis, blindness, epilepsy or psychomotor and mental retardation, months or years later (Alford et al, 1974).

Parasitemia initiates the production of protective antibodies. Once immunity to the organism develops, the parasite survives for many years by encysting in muscle and other tissues. The cysts are infectious and stimulate a state of persistent immunity that can be detected by the presence of toxoplasma specific antibodies. Chronically infected women may thus provide the opportunity for the parasite to invade the non-immune foetus. In congenital infection the disease is often limited to the CNS.

Isolation of the organism is the surest way to attribute foetal loss to toxoplasma infection but isolation studies are cumbersome, costly, tedious and take a long time to be declared. Therefore, one has to depend on detection of toxoplasma antibodies - an indirect evidence. Several serological tests are available for detecting antibodies. Recently, ELISA technique for detecting IgG and IgM antibodies has been found to be most specific, sensitive and a highly reproducible method for diagnosing toxoplasmosis (Engvall and Perlman, 1971).

MATERIAL AND METHODS

Present study has been conducted on 200 patients. The patients were divided into two groups. Group I comprised of 100 women in reproductive age group with history of spontaneous or recurrent abortion, premature delivery, still birth or congenital anomalies in their new born and group II comprised of 100 women without any history of pregnancy wastage.

In all individuals under study detailed clinical data was recorded. Any history of lymphadenopathy, pyrexia of unknown origin, convulsions and visual disturbances was taken. Routine tests were performed on all subjects to exclude other commonly known etiological factors for foetal loss such as syphilis, diabetes mellitus, Rh incompatibility and renal disease.

5 ml blood was obtained from each subjects and serum stored at -20°C till used.

Serum samples were tested for IgG and IgM antibodies by ELISA technique as described by Noat and Remington (1981).

RESULTS

Age of patients in both groups of subjects ranged from 20-36 years. None of the patients under study had signs or symptoms like lymphadenopathy, pyrexia of unknown origin, convulsion or visual disturbances to suggest recent infection with toxoplasma.

Twenty two percent of patients in group I showed positive serological test for IgG anti-bodies. These were tested

for IgM antibodies. Five percent showed positive IgM antibodies. In group II positive IgG antibodies were detected in eight percent cases and none of these subjects had positive IgM antibodies. The difference in both the groups has been found to be statistically significant ($p = 0.05$) Table I.

Majority of cases in group I who were positive for IgG toxoplasma antibodies had history of abortion (36.5%). 22.7% had still birth, 13.6% had congenital anomalies and 26.6% had more than one foetal wastage (Table II).

Outcome of present pregnancy in group I cases is as shown in Table III. 77.3% of cases positive for toxoplasmosis had pregnancy wastage and 22.7% of cases had normal outcome. While in the seronegative cases 14.10% had pregnancy wastage and 85.9% gave birth to normal foetuses. This difference in foetal wastage of present pregnancy between the seropositive and seronegative cases of group I is statistically significant ($Z = 5.83$).

Outcome of present pregnancy in group II seropositive cases was that 25% had unfavourable outcome, 75% had normal outcome and in the seronegative cases 8.7% had pregnancy wastage, 91.3% cases gave births to normal foetuses. This difference in foetal wastage between seropositive and seronegative cases of group II is statistically not significant ($Z = 1.47$) Table IV.

Seropositive cases did not have significantly greater contact with cats or sheep which are incriminated as

Table II

Showing obstetrical history in group I seropositive cases

Obstetrical history	No. of sera positive	%
Abortion	8	36.5
Still birth	5	22.7
Abortion and still birth	1	4.5
Congenital anomalies	3	13.6
Abortion & pre-term delivery	2	9.1
Pre-term delivery	3	13.6
Total	22	100

Table I

Serological profile of sera from both the groups

	Group I		Group II	
	IgG	IgM	IgG	IgM
No. of sera tested	100	22	100	8
No. of sera positive	22	5	8	—
Percentage	22	5	8	—

$x^2 = 7.81$
$p = 0.05$

Table III

Showing foetal outcome of present pregnancy in group I

	Total cases	Unfavourable outcome		Live births	
		No. of cases	Percentage	No. of cases	Percentage
Seropositive cases	22	17	77.3	5	22.73
Seronegative cases	78	11	14.10	67	85.90

Z = 5.83

Table IV

Showing foetal outcome of present pregnancy in group II

	Total cases	Unfavourable outcome		Live births	
		No. of cases	Percentage	No. of cases	Percentage
Seropositive cases	8	2	25.0	6	75.0
Seronegative cases	92	8	8.70	84	91.30

Z = 1.47

important animal reservoirs although many patients were subjected to exposure to stray cats and other non-domestic animals (Table V).

DISCUSSION

In this study the incidence of toxoplasmosis in group II was 8%. This is comparable with the results of Mahajan et al (1976) and Singh et al (1978) who showed an incidence of 9% and 7.1% respectively in normal antenatal cases. In cases with bad obstetrical history the incidence of toxoplasmosis is 22%. This is concordant with the results of Saini et al (1984) from Rohtak, Swaran and Kasturi (1990) from Jammu and Ajay A., Mehta & Mehta (1990) from Bombay who have shown 19%, 23.2% and 21.7% incidence of toxoplasmosis in women with pregnancy wastage.

The outcome of present pregnancy in group I seropositive cases was that 77.3% had unfavourable outcome and only 22.7% gave birth to live foetuses. This

Table V

Pattern of animal contact in seropositive cases

Animal	Seropositve cases in group I	
	Number	%
Cat	1	4.54
Dog	4	18.20
Sheep	1	4.54
Cattle	10	45.40
No contact with animal	6	27.42
Total	22	100

result is comparable with that of Swaran & Kasturi (1990) who noted that 72% of seropositive cases with bad obstetrical history had pregnancy wastage. In group I seronegative cases only 14-1% cases had unfavourable outcome while 85.9% gave birth to live babies. This difference in foetal wastage between seropositive and seronegative cases of group I has been found to be statistically significant (Z = 5.83%).

In group II seropositive cases 25% had unfavourable outcome and in seronegative cases 8.7% had unfavourable outcome.

In the seronegative cases of both groups 11.7% had pregnancy wastage. This is concordant with the results of Ajay A. Mehta and Mehta (1990) who showed 13.2% pregnancy wastage in their seronegative group.

The outcome of pregnancy in seronegative cases in group I and group II separately cannot be compared because there is no literature available on this aspect todate.

From this analysis it can be established that toxoplasmosis is quite prevalent and that it plays an important role in determining foetal outcome. As majority of the acquired infections are sub-clinical, routine serological testing for toxoplasmosis in pregnancy is advocated.

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