Seroprevalence of Antibodies to Toxoplasma Gondii, with Particular Reference to Obstetric History of Patients in Rawalpindi - Islamabad, Pakistan

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Riaz Ahmed Pal, Mazhar Qayyum, Muhammad Yaseen (Department of Biological Sciences, Quaid.i.Azam University, Islamabad, Pakistan.)

Abstract

Six hundred and forty blood samples were obtained from Rawaipindi-Islamabad to determine the frequency of Toxoplasma gondli antibodies using indirect Two of Toxoplasmosis. Forty (17%) cases were positive for IgG antibody. Seven (3%) of these cases showed antibody titre greater than 1:320. Of 63 children tested, 8 (12.30%) were positive. Four (6%) children had a rising titre from 1:160 to 1:1025. Prevalence of Toxoplasma antibodies was correlated to mode of living, maternal obstetric history, their animal contact and age of the children (JPMA 46:56,1996).

Introduction

Toxoplasmosis, a wide-spread disease, occurs as an acquired or congenital form in man. It is usually asymptomatic. The association of Toxoplasmosis with reproductive disorders has been suggested by some workers[1-12]. Toxoplasma gondii crosses the placental barrier and infects the foetus in utero[11]. Congenital infection may, result in spontaneous abortion, prematurity or still- birth and may be a potent problem to obstetricians. Some of these infants, normal at birth, may develop clinical symptoms later[4]. Sixty percent of 125 pregnant womenfromTobasco, Mexico, tested positive for antibodies[13]. Of these, 46.6 percent showed titre greater than 1:1024, a ratio that indicates acute infection. Cases have been presented to indicate ocular and central nervous system manifestations, especially in intravenous drug users[8,9]. Keeping in view the severity of infection, nation-wide survey studies have been carried out in different parts of the world[14]

For an epidemiological study, the serological test like indirect fluorescence antibody (IFA) has shown excellent results and seems to be most practical[1-12,15,16]. In Pakistan, little attention was given to determine the frequency of Toxoplasmosis with particular reference to obstetric history and other clinical symptoms of the patients. The present study was therefore, initiated to evaluate the level of Toxoplasma antibodies in patients suspected of Toxoplasmosis by indirect immunofluoresence antibody (IFA) technique.

Materials and Methods

A total of 640 blood samples were obtained from different_localities of Rawalpindi-Islamabad. Three hundred and thirty-five samples were collected from Rawalpindi-Islamabad, while 240 samples, of patients having different obstetric histories, were procured from medical clinics, nursing homes and hospitals. Sixty-five blood specimens were taken from children of different age groups. All blood samples were drawn by venipuncture, cooled to room temperature in the vacutainer and centrifuged at 1500 rpm for five minutes. Sera were transferred by micropipette to Eppendorl vials and frozen at -20°C until needed. Background information about donors past histories were sought where possible. The indirect fluorescent antibody (IFA) technique was applied to determine the presence or absence of

Toxoplasma gondii antibodies, by using Toxoplasmosis test kit “bio Merieux”. All the sera were tested according to standard procedure. Teflon coated slides containing positive and negative sera were used and examined under Nikon microscOpe, with a mercury vapor lamp as the light source. Yellow-green fluorescence around the entire periphery of the organism constituted positive reaction. Negative reactions were either not visible orhad only polar fluorescence.

Results

The overall seroprevalence of Toxoplasma gondli is presented in Table I.

Table I. Frequencies of Toxoplasma antibodies from healthy and suspected patients of Rawalpindi-Islamabad.

Status	No. Tested	No. +ve (%)	Antibody titre			
			>40	>160	>320	>640
Healthy individuals	335	16 (5)	12	4	-	-
Suspected females having obstetric history	240	40 (17)	2	13	13	12
Suspected children having disease symptoms	65	8 (12)	2	3	1	2

IgG titres: >640	High Positive
>160	Positive
>40	Low positive

Of 240 patients suspected of Toxoplasmosis, 40 (17%) were seropositive and of 335 healthy individual 16 (5%) were seropositive.. Moreover, in 65 children, 8 (12%) cases were found seropositive.

Table II. Frequencies of Toxoplasma Gondii antibodies of 40 patients having different obstetric histories.

Complaints	No. of patients	Mode of living*	No. of Abortions range	Stage of Abortion (months range)	Animals contact	Antibody Titres range
Abortions	1	R	0-1	4	Dogs	0-1:40
Threatened Abortions	14	R/U	1-3	4	Cattle, Dogs & Cats	1:40-1:1024
Repeated Abortions	11	R/U	2-3	3-7	Cats	1:40-1:2560
Still-births	2	U	2-2	-	Dogs	1:64-1:128
Repeated abortions and Still births	7	R/U	3-3	1-3	Cats, Cattle	1:320-1:2560
Abortions and threatened abortions	2	U	1-3	-	Goats, Sheep	1:64-1:160
Repeated and threatened abortions	2	R/U	2-2	3-7	Goats, Cattle	1:160-1:160

*R: Rural , U:Urban

Table II shows the frequency of Toxoplasma antibodies in patients with varying obstetric histories. In 40 (17%) individuals found seropositive, Toxoplasma antibodies varied between 1:40 and 1:2560 of women with abortions, threatened abortions, repeated abortions and still-births. The significant titre of 1:3 20 and above were observed in7 patients. Similarly, in the distribution of antibodies level in children (Table III)

Table III. Frequencies of Toxoplasma antibodies level in 65 children having different clinical symptoms.

Age groups (Year)	No. Tested	No. Positive (%)	Complaints	Animal Contacts	Antibody titre Range
>1	25	1 (4.00)	Non-specific adenopathy anaemia, fever	No	0-1:40
2-4	17	2 (11.8)	Non-specific adenopathy hepato-splenomegaly jaundice	Sheep Goats	1:40-1:320
5-7	12	4 (33.3)	Non-specific lymphadenopathy	Cattle ,Goats Dogs	1:160-1:1025
8-10	11	1 (9.1)	Non-specific lymphadenopathy	Cats	0-1:40

it was noted, that of 65 subjects of different age groups, 4 had a rising antibody titre levels of 1:160 to 1:1025, while the others fell within the range of 1:40 to 1:320.

Discussion

The results of the present study revealed a prevalence of Toxoplasma gondii antibodies in asymptomatic individuals with a seropositivity of 4.78 percent. A similar study done in India reported Toxoplasma gondii antibodies in healthy controls to vary from 1.5 to 21 percent[5-10]. Comparing the results of the two studies, a low percentage of inapparent infection in Pakistan is noted. Many workers[3,7-17] found no difference in the prevalence rates of Toxoplasma gondii antibodies related to the topographic situation. Furthermore, it is suggested that hygienic conditions and socio-economic

stmcture of a society, can collectively have a notable influence in the diffusion of Toxoplasma[18,19]. . Rising antibodies titres were noted in cases having animal contact especially with cats and other domestic ruminants. It has been determined that cats play a central role in the epidemiology of Toxoplasma gondii and the disease is virtually absent in areas where cats do not exist[20]. This study indicates that pet or stray cats and climatic conditions may be the most important factors associated with the dissemination of disease. Furthermore, it has been observed that children under ten years of age were found seropositive for Toxoplasmosis with different clinical sympturns as non-specific adenopathy. post-encephalitis and hepatosplenomegaly.

Children with jaundice and anemia showed, significant antibodies titre. In these cases mother's blood could not be screened for Toxoplasma gondii antibodies. It is thus difficult to conclude whether the condition is congenital or acquired. A large number of reports support lymphadenopath1 to be a definite manifestation of acquired Toxoplasmosis[5,6].

The study indicates that more than 50 percent of women in their child-bearing years are at risk for acquiring Toxoplasmosis during pregnancy. It could therefore be concluded, that Toxoplasmosis is prevalent in subclinical and clinical forms in this part of Pakistan. Preventive measures as daily cleaning of cat litter boxes and proper disposal of faeces alongwith hygieruc precautions as washing of hands prior to eating and after performing agricultural activities should be adopted. Pregnant women should not undertake cleaning of cats litter boxes. Moreover, raw meat should not be fed to cats.

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