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SEROPREVALENCE OF ACUTE TOXOPLASMOSIS IN SOUTH ANDHRA PRADESH: A ONE YEAR STUDY.

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Abstract: Two hundred and seventy six (276) individuals were tested for toxoplasma IgM antibody to find out the prevalence of acute infection. Of these, 234 subjects were HIV seronegative females in first trimester of pregnancy, 25 were infants and children (1 month-5 years) having some form of congenital abnormalities, and 17 were HIV seropositive adult males. Thirty two (13.7%)of the pregnant females were found to have acute infection and two infants were seropositive. None of the HIV positive individuals were tested positive. This study shows that maternal toxoplasma infection is common in this part of the country.

Keywords: Toxoplasma, Pregnancy, AIDS

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INTRODUCTION

Toxoplasmosis is an anthropozoonosis caused by Toxoplasma gondii, an obligate sporozoan intracellular pathogen. It is usually a benign, clinically silent condition in normal individuals. Cats and some other feline animals act as definitive host where sexual reproduction occurs. Three modes of transmission lead to most of the human infections: (i) directly from ingestion of infective oocysts in food like unwashed leafy vegetables or water contaminated with cat faeces.[1] (ii) Indirectly from ingestion of raw or under cooked meat of animals containing tissue cysts (iii) Transplacental transfer from mother to fetus during pregnancy.

In recent years, the risk of central nervous system infection in AIDS patients has increased substantially. It has been estimated that in areas of high seroprevalance for toxoplasmosis, 25 50% of all AIDS patients will develop toxoplasma encephalitis.[2]

The primary aim of diagnosis of toxoplasma infection in pregnancy is to prevent fetal infection which can lead to various neurologic and ophthalmologic complications. Infection acquired in the first trimester of pregnancy results in congenital infection in 10-25% of cases which is severe, resulting in spontaneous abortion, still birth and severe disease in new born.[3]In contrast, 72-79% and 89-100% of infants infected as a result of second and third trimester infections, respectively, do not have signs of disease. For this, routine screening of pregnant women for toxoplasma serology along with other agents causing congenital infection is advised during antenatal checkup. These include rubella, cytomegalovirus, and herpes simplex virus (TORCH panel). Although such screening is done routinely in many centres but there are only a few studies reported from India focusing on the seroprevalance of these agents in pregnant women. The aim of this study was to find out the prevalence of acute toxoplasma infection in this part of the country (south Andhra Pradesh) along with other TORCH agents.

MATERIALS AND METHODS:

Two hundred and seventy six individuals were tested for the TORCH panel. The study population comprised 234 non – HIV infected pregnant women. 25 infants and children (1 month- 5 years) with some form of neurological and congenital abnormality and 17 HIV positive adults. Toxoplasma IgM was detected by immunocapture ELISA technique and other agents by indirect ELISA using kits obtained from Human (Germany). Readings were taken in automatic ELISA plate reader (Molecular Devices, USA). The manufacturer's instructions were followed for performing the tests.

RESULTS:

Two hundred and thirty four pregnant women were tested of which 32(13.7%) (Table- 1) were positive for toxoplasma IgM. Two out of the eight infants and children were positive while all of the HIV positive patients were negative. Co-infection of toxoplasma with other agents was seen in 24 individuals (see Table-II). Overall acute toxoplasma infection among the 276 subjects was found to be 34 (12.3%).

DISCUSSION:

Reports of maternal infection by toxoplasma from India are available related to reproductive wastages.[4,5] In India, a rising trend has been observed for toxoplasma infection among women with bad obstetric history.[6] In our study, 32 (13.7%) of the pregnant women were seropositive for toxoplasma IgM indicating recent infection. Multiple infections were seen in 24 (75%) of the 32 toxoplasma infected individuals. A similar prevalence of infection (13.1%) was seen among 175 pregnant women screened in Hyderabad in a recent study.[7] Similar studies from Delhi has reported 11.6% seropositivity[8] and from Culcutta 7.1% positivity (Chakraborty et al,1997) for IgM.[9] 148 out of 234 (63.2%) females had evidence of one or more infections which is less than the study by Kaur et al, (1999) where they found93.4% infection rate.75 % of the 32 toxoplasma infected females had co-infection with one or two other agents(Table-II). Two of the infants had toxoplasma infection one of them was co-infected with HSV and the other with HSV and CMV, reflecting multiple etiology of congenital abnormality observed in them. None of the HIV positive patients had evidence of recent infection with toxoplasma.

75% of the 32 toxoplasma infected females had co-infection with one or two other agents (Table II).

It appears from our studies that seroprevalance among pregnant women in different parts of India show variations (Tirupati: 13.7%, Hyderabad: 13.1%, Delhi: 11.6%, Calcutta: 7.1%). These variations can be co-related to the reports of toxoplasma seroprevalance among normal population from various parts of India.

Seroprevalance (IgM) among general population was found to be 30.9% in Bombay [10]; 17.2% in Jodhpur[11]; 23.7% in Culcutta[12]; and 57% in Kumaon region.[13] In contrast various studies from USA and Europe show similar or much higher infection rates ranging from 10-30% in USA to 50-64% in certain European countries like Italy, Portugal, Spain and Greece (Remington et al, 1995). This type of variation in different parts of the country and world can be explained by eating habits of the population, occupation and personnel habits. In regions where feeding habit is predominantly meat based and also in places where there is practice of eating improperly washed raw vegetables from

fields with high feline population (particularly cats) there will be corresponding higher prevalence of toxoplasma infection. Keeping cats as pets is more common in certain parts of the world but not very popular in India.

Our study relied on a single measure of the toxoplasma IgM for diagnosis. This test is highly suggestive of recently acquired or acute infection but is not absolutely diagnostic. As IgM may persist for longer than 12 months after acute infection, its detection requires further assessment with a panel of tests like IgA and IgE ELISA,AC/HS agglutination test, IgG avidity test and PCR to confirm or exclude current acute infection.[14]

CONCLUSIONS:

Our study shows that apart from other agents, toxoplasma infection is widespread among the pregnant women in this region. Multiple infection increases the risk of adverse pregnancy outcome proportionately. Although toxoplasma IgM detection in a single sample is not an ideal screening test in pregnancy, but it remains the only feasible alternative in countries with population having constrained economic resources and laboratories with limited financial, logistic, and manpower support.

Table 1

TORCH IgM positivity among pregnant women

Pathogen	Seropositivity (n=234)
T.gondii	32 (13.7%)
Rubella	34 (14.5%)
CMV	14 (5.9%)
HSV	68 (29.1%)

Table 2

Co-infection with toxoplasma among pregnant women

Pathogen(s)	Number inferted (n=32)
HSV	10
Rubella	06
CMV	01
Rubella + HSV	06
CMV + HSV	01
Total	24 (75%)

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