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Original Research Article

SEROPREVALENCE OF TOXOPLASMOSIS INHIV/AIDS PATIENTS AT TERTIARY CARE CENTER BIKANER, RAJASTHAN

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Abstract

Background: The National AIDS Control Programme of India does not recommend screening for toxoplasmosis among asymptomatic people living with HIV. With reference to current situation analysis and limited number of studies related to toxoplasmosis in people living with HIV, the present study was undertaken on to study the prevalence of toxoplasmosis in people living with HIV.

Methods: This was cross-sectional study conducted on 196 HIV positive patients over a 1year period.Specific anti-T. gondii IgG antibodies were analyzed using ELISA by Toxo-IgG kit. Patient sample with cut-off value (antibody titer) ≥ 50 IU/ml was considered positive.

Results: The seroprevalence of toxoplasmosis in HIV positive patients was 10.71% .Mean CD4 count in toxoplasmosis positive cases was 40.90±19.30 cells/mm3 while mean CD4 count in toxoplasmosis negative cases was 65.73±22.19 cells/mm3 and the difference between two groups was found to be statistically significant.

Conclusion: We concluded that there is high prevalence of toxoplasmosis in patients with CD4 counts <100 cells/mm3 without a history of toxoplasmosis disease in our region and it is even higher in those who have CD4 count <50 cells/mm3 .

Keywords: CD4, HIV, Seoprevalence

Introduction

The acquired immunodeficiency syndrome (AIDS) is a fatal illness caused by a retrovirus known as the human immunodeficiency virus that breaks down the body's immune system, progressively leads to AIDS. There are 2.47 million persons in India living with HIV; equivalent to approximately 0.36% of the adult population. The revised national estimate reflects the availability of improved data rather than a substantial decrease in actual HIV prevalence in India. The transmission route is still predominantly sexual (87.4%); other routes of transmission by order of proportion include prenatal (4.7%), unsafe blood and blood products (1.7%), infected needles and syringes (1.8%) and unspecified routes of transmission[1].

Toxoplasma gondii is a protozoan parasite present world-wide and causes major opportunistic infections in HIV infected people. Cell-mediated immunity (CMI) will develop after acute infection with T. gondii but infection is only controlled not eradicated. In the chronic or latent phase of infection, the organisms persist in the tissues of infected individuals such as brain, skeletal muscle, and heart. In HIV infection, symptomatic disease most often occurs as a result of reactivation of latent infection[2]. Toxoplasmosis has been reported as the most common opportunistic infection in HIV/AIDS in developed countries and most common cause of focal brain lesions, coma and death. It commonly causes encephalitis in HIV-infected patients.

The prevalence of toxoplasma infection varies depending on the geographical area and population groups and also with the age. In Europe and other tropical countries, the prevalence is over 50%.In Hong Kong, it was 9.8%[3].In US, about 1/3rd of HIV-infected patients have antibodies against T. gondii and seroprevalence data of HIV-infected patients come from small, predominantly male cohorts in which the range of prevalence is 3-22%.[4,5]

In India, one study by Anuradha and Preethi, observed seroprevalence of 34.78% among HIV-positive patients[6,7]. In another study seropositivity was 67.8% in HIV-infected people when compared to immunocompetent adults (30.9%).The variation in prevalence rates could be due to differences within the geographical areas, infection is more common in tropical conditions and at lower altitudes than in cold and mountainous region. Another reason could be due to the recruited subjects, using different assay and the year of study.[8]

Research and design methods

Study Design: hospital base cross-sectional study

Study Place: At ART center and department of medicine, S.P. Medical College & Associated Group of Hospitals, Bikaner

Study Population: People living with HIV, OPD &IPD of Medicine Department and ART Center.

Study duration:12 months.

Sampling Method: single spot sample.
Sample size: n=4pq/l
When P=15%
N=196
Confidence limit=95%
Power of study=80%
Inclusion criteria:

1. Willing to participate.
2. people living with HIV
3. Age>18yrs.

Exclusion criteria:

Not willing to participate or not giving consent

Analysis Two blood samples were collected from each patient; the first one in a plastic serum tube and the second one in an EDTA tube. The EDTA whole blood will test CD4+ T cell, CD4+ T cells (helper T cells), and CD8+ T cells (suppressor/inducer T cells). This is done by incubating anti-coagulated whole blood with monoclonal antibodies to the various cellular antigens that identify specific cell populations (phenotypes), and then lysing the blood to remove red blood cells. The antibodies are conjugated to fluorescent tags that emit light of a certain frequency when excited by a laser beam. The specimens are analyzed on a flow cytometer to determine the proportion of cells of CD4 phenotype (that emit light at the right wavelength). Specific anti-T. gondii IgG antibodies was analyze using ELISA by Toxo-IgG kit A patient sample with cut-off value (antibody titer) higher or equal to 50 IU/ml was considered positive. That means that they had a prior contact with T. gondii. The IgG titers lower than 50 IU/ml were regarded negative.

Statistical analysis

All data were analyzed on EPI-info statistical software. Qualitative data were expressed in the form of proportion. Quantitative data were expressed in mean ± SD
Qualitative data were compared by Chi square test
Unpaired t test were used to infer the difference in means.

Results

Table 1: Distribution of cases according to CD 4 count

CD 4 count(cells/mm^3)	Mean	SD
	63.07	23.17

In present study, mean CD4 count amongst 196 HIV positive was 63.07± 23.17cells/mm^3.

Table 2: Distribution of cases according to toxoplasmosis in HIV patients

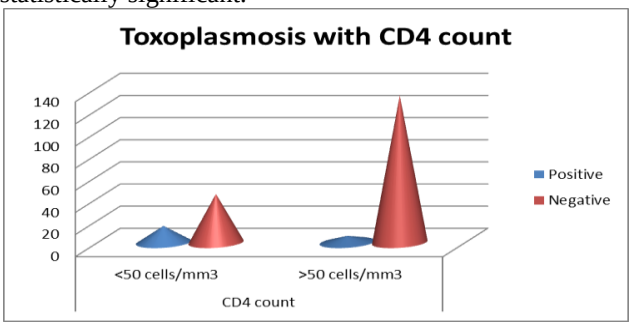
Toxoplasmosis	No. of cases	Percentage
Present	21	10.71%
Absent	175	89.29%
Total	196	100.00

In our study 10.71% cases were infected by toxoplasmosis.

Table 3: Association between mean CD4 count and toxoplasmosis

Toxoplasmosis	Mean CD4 count(cells/mm^3)	SD
Positive	40.90	19.30
Negative	65.73	22.19
p-value	0.001	

In our study mean CD4 count in toxoplasmosis positive cases was 40.90±19.30 cells/mm^3 while mean CD4 count in toxoplasmosis negative cases was 65.73 ±22.19 cells/mm^3 and the difference between two groups was found to be statistically significant.



Discussion

Screening for toxoplasmosis has emerged as one of the most important tool to prevent toxoplasmosis infection in People Living with HIV. The prevalence of toxoplasmosis among People Living with HIV is variable and depends upon the endemicity of toxoplasmosis infections in the geographical region and also on the study population.Prevalence of toxoplasma in our study was 10.71%.

In present study, mean CD4 count amongst study population was 63.07± 23.17cells/mm3.

Kadam et al 82 found that mean CD4 count of the patients was 64.5 cells/mm3 and 40% patients had CD4 < 50 cells/ mm3.

In the study done by S Anuradha et al6 mean CD4 count of the subjects was 54.9±26.58 cells/ mm3 and 42.97% had CD4 < 50 cells/ mm3. These findings were comparable to our results.

In our study, out of 21 toxoplasmosis positive cases, 15 (71.43%) had CD4 counts <50 cells/mm3. Mean CD4 count in toxoplasmosis positive cases were 40.90±19.30 cells/mm3 while mean CD4 count in toxoplasmosis negative cases was 65.73 ±22.19 cells/mm3.

Oyella et al83 observed that mean CD4 count of the patients was 23 cells/mm3 and 73.3% patients had CD4 < 50 cells/mm3. These findings were consistent to our results.

Conclusion

We conclude that there is high prevalence of toxoplasmosis in patients with CD4 counts <100 cells/mm3 and it is even

higher in those who have CD4 count <50 cells/mm3 . These two factors signify the importance of targeted routine toxoplasmosis screening in India. With the advent of a rapid test for toxoplasmosis, National programs should consider implementation of universal, routine toxoplasmosis screening in HIV patients with CD4 <100/mm3 .This in turn would significantly reduce morbidity and mortality associated with toxoplasmosis.

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