

## **Research Article**

### **A study on Meningitis among patients with HIV at a Tertiary care hospital**

**Dr. U.M. Natarajan<sup>1</sup>, Dr. S.P. Prakash<sup>2</sup>**

<sup>1</sup>Associate Professor, Department of Medicine, Kerala Medical College, Mangod, Cherupulassery, Palakkad

<sup>2</sup>Professor, Department of Medicine, Kerala Medical College, Mangod, Cherupulassery, Palakkad

#### **\*Corresponding author**

Dr. U.M. Natarajan

Email: [ramspsm@gmail.com](mailto:ramspsm@gmail.com)

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**Abstract:** HIV/AIDS has posed many unprecedented challenges. It causes a wide spectrum of disease manifestation. Approximately 60 % of the AIDS patients have neurological symptoms and 80-90 % is found to have neuropathological abnormality at biopsy. In this method Patients admitted in medicine, neurology and skin and STD with symptoms referring to nervous system were screened and confirmed to have HIV-1 and/or HIV-2 infection (seropositive) by two HIV test systems (Rapid / ELISA / Western Blot) were enrolled if they met the inclusion criteria. In results it was found that cryptococcal meningitis (28%) was more commonly present followed by TB meningitis (24%), Tuberculoma (16%), and meningo encephalitis (4%). In conclusion there is high incidence of neurological manifestations with tuberculosis and Cryptococci being commonest pathogenic agents in course of HIV infections in this study.

**Keywords:** Human Immunodeficiency Virus; Tubercular meningitis; Cryptococcal meningitis.

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#### **INTRODUCTION:**

HIV/AIDS in India came into public view in 1986 with detection of first few cases of HIV in Chennai and first AIDS case in Mumbai in 1987. The current scenario in our country is alarming and the situation is grim. The overall prevalence is still low as compared to many other countries in South Eastern Asia, but because of our large population, even a small prevalence translates into a large number of infections. Presence of HIV-2 infection in India was reported for the first time from Mumbai in 1991. Two different types of HIV epidemics are seen in India. In the northeastern India, the epidemic is mainly among intravenous drug abusers, whereas, it is mainly spreading through sexual route in the rest of the country [1].

The HIV/AIDS has posed many unprecedented challenges. We are confronted with the problem that has no curative or palliative treatment or a preventive or therapeutic vaccine, at least for now. Further, owing to the insidious and covert nature of the disease, the problem is compounded by a prevailing attitude of denial or resistance of complacency at all levels. Unlike epidemic of disease such as cholera, plague and polio, which manifest overtly and acutely and elicit concrete response, the visible manifestation of HIV occurs only at the last stage. As a result, there is a visible lack of realization of the problem in the society. The reactive response, therefore, does not match the real magnitude

and gravity of the problem. Another major challenge in the context of HIV/AIDS and sexually transmitted diseases (STD) is their intimate association with the issue of sexuality, which continues to be a taboo in our society, and not discussed openly. It has complicated the process of finding viable solution to the problem, so HIV/AIDS has generated so much concern because of rapid dissemination, long incubation period, specific public health problem, fatal outcome, and great socioeconomic impact [2].

The nervous system is among the most frequent and serious targets of human immunodeficiency virus (HIV) infection. Forty percent to 70% of all persons infected with HIV develop symptomatic neurologic disorders. Neurologic disease with HIV infection is not only common but also it is frequently both debilitating and life-threatening. Although nervous system involvement typically occurs with profound immunosuppression and in the presence of other acquired immunodeficiency syndrome (AIDS)-defining illnesses, in 10% to 20% of HIV-seropositive persons it heralds AIDS. Careful neurologic examination, even in the absence of specific complaints, frequently reveals evidence of central or peripheral nervous system dysfunction. Any part of the neuraxis may be affected by the wide variety of neurologic disorders that complicate HIV-1. Illnesses affecting the nervous system because of HIV may be separated into primary illnesses that may be the direct result of the

virus and secondary illnesses, which result from other identifiable causes. Primary HIV-associated disorders include encephalopathy (dementia), myelopathy, distal sensory polyneuropathy (DSP), and myopathy. Secondary complications are chiefly a consequence of the severe abnormalities of cellular immunity accompanying AIDS. The main infectious complications are cerebral toxoplasmosis, cryptococcal meningitis, Cytomegalovirus (CMV) infection, and progressive multifocal leukoencephalopathy (PML). Other causes of neurologic disease include primary and metastatic neoplasm, drug toxicity, metabolic and nutritional disorders, and cerebrovascular complications [3].

**METHODOLOGY:**

Patients admitted in medicine, neurology and skin and STD wards in a Tertiary care Hospital diagnosed or suspected to have HIV infection due to high-risk behavior or due to clinical clues were screened for HIV-1 and HIV-2 antibodies by ELISA and or Rapid tests. The Patient was said to be HIV positive when tested positive by 2 HIV test systems. The kits used in our hospital are Veronostica ELISA and Comb AIDS, which are approved by NACO (National AIDS Control Organization).

**Inclusion Criteria**

Adults presenting with neurological manifestations and diagnosed to be HIV seropositive by following criteria:

1. One rapid test + One ELISA test or
2. Two ELISA or
3. One ELISA + One Western Blot

**Exclusion Criteria**

Patients with pre-existing neurological disease and children

**Method of Collection**

Data was collected in a pretested proforma by meeting the objective of the study. A detailed history, physical findings with thorough neurological examination and necessary investigation were recorded. Treatment and outcome were not included in this study.

**RESULTS:**

Among total 50 study subjects, 70% were males and 30% were females. Among males, highest proportion of patients was in the age group of 26 – 35 years (51.4%) followed by 36 – 45years (31.4%) and more than 45 years (11.5%). Among females, highest proportion of patients was in the age group of 26 – 35 years (53.3%) followed by 36 – 45years (33.3%) and more than 45 years (6.7%). This difference in age distribution in relation to gender was not significant.

**Table.1: Age sex wise distribution of study subjects**

Age group	Sex		Total
	Male	Female	
Up to 25 years	02 (5.7%)	01 (6.7%)	03 (06%)
26 – 35 years	18 (51.4%)	08 (53.3%)	26 (52%)
36 – 45 years	11 (31.4%)	05 (33.3%)	16 (32%)
> 45 years	04 (11.5%)	01 (6.7%)	05 (10%)
Total	35 (100%)	15 (100%)	50 (100%)

Chi square – 0.27                      df-3                      p value – 0.96

**Table 2: Distribution of study subjects based on diagnosis**

Diagnosis	Frequency	Percentage
Cryptococcal meningitis	14	28%
TB meningitis	12	24%
Meningo encephalitis	02	04%
Tuberculoma	08	16%
HIV encephalopathy	04	08%
Herpes Zoster	03	06%
Transverse myelitis	02	04%
CVA	02	04%
Bell's palsy	01	02%
Cerebellitis	01	02%
PML	01	02%
Total	50	100%

It was found that cryptococcal meningitis (28%) was more commonly present followed by TB

meningitis (24%), Tuberculoma (16%), and Meningo encephalitis (4%)

**Table 3: Comparison of meningitis**

Features	Meningitis			P value*
	CM (14)	TBM (12)	ME (02)	
<b>Symptoms</b>				
Weight loss	06 (42.8%)	03 (25.0%)	02 (100%)	0.12
Headache	12 (85.7%)	09 (75.0%)	00	0.48
Sensorium	04 (28.5%)	08 (66.7%)	01 (50%)	0.15
FND	01 (7.1%)	02 (16.7%)	00	0.88
convulsions	03 (21.4%)	01 (8.3%)	00	0.70
<b>Signs</b>				
Pallor	11 (78.6%)	10 (83.3%)	02 (100%)	0.75
Candida	07 (50.0%)	02 (16.7%)	00	0.17
Lymphadenopathy	03 (21.4%)	02 (16.7%)	00	0.84
<b>CNS</b>				
HMF	04 (28.5%)	09 (75.0%)	02 (100%)	0.02
Cranial nerve	02 (14.3%)	02 (16.7%)	00	0.70
Fundus	00	03 (25.0%)	00	0.16
Motor	01 (7.1%)	02 (16.7%)	00	0.88
<b>CSF protein</b>				0.001
< 50	04 (28.5%)	00	01 (50%)	
50 – 100	06 (43.0%)	05 (41.7%)	01 (50%)	
> 100	04 (28.5%)	07 (58.3%)	00	
<b>CSF Sugar</b>				0.03
< 40	07 (50.0%)	06 (50.0%)	01 (50%)	
40 – 60	04 (28.5%)	03 (25.0%)	01 (50%)	
> 60	03 (21.5%)	03 (25.0%)	00	
<b>CSF cells</b>				0.04
<5	03 (21.5%)	04 (33.3%)	02 (100%)	
6 – 50	08 (57.0%)	02 (16.7%)	00	
>50	03 (21.5%)	06 (50.0%)	00	

\* Chi square test

Weight loss was more commonly present in cryptococcal meningitis (42.8%) compared to TB meningitis (25%). Head ache was more commonly present in crypto cocal meningitis (85.7%) compared to TB meningitis (75%). Sensorium was more commonly present in TB meningitis (66.7%) compared to cryptococcal meningitis (28.5%). Pallor was more commonly present in TB meningitis (83.3%) compared to cryptococcal meningitis (78.6%). Candida was more commonly present in cryptococcal meningitis (50%) compared to TB meningitis (16.7%)

**DISCUSSION:**

Among males, highest proportion of patients was in the age group of 26 – 35 years (51.4%) followed by 36 – 45years (31.4%) and more than 45 years (11.5%). Among females, highest proportion of patients were in the age group of 26 – 35 years (53.3%) followed by 36 – 45years (33.3%) and more than 45 years (6.7%)

Epidemiological analysis of AIDS cases reported to NACO in Dec. 2001 reveals that the disease is affecting mainly the people in sexually active group of 15-44 yrs. Mc. Arthur *et al.*; [4] in their study of 186 patients found the age ranging from 18 to72 yrs with a mean of 36 yrs for males and 38yrs for females. Snider *et al.*; [5] in their study of 50 cases reported the age range from 16 to 69 years in their study group.

Millogo *et al.*; [6] at in their study in Burkina Faso reported mean age of 35.7 yrs. Of the 45 patients 38 (84.4%) were males 7 (15.6%) were females. M: F 5.43:1. Sircar *et al* [7] in his study in Lucknow observed male to female ratio of 4.12:

It was found that cryptococcal meningitis (28%) was more commonly present followed by TB meningitis (24%), Tuberculoma (16%), and meningo encephalitis (4%). Mc. Arthur *et al.*; [4] reported that 10% of all AIDS patients in their study presented with complaints referable to the nervous system. Levy *et al.*; [8] in their study in San Francisco reported that 1/3 rd

of their patients had neurological disorders as their presenting symptoms. Neurological disease is the 1st manifestation of AIDS in 10-20% symptomatic HIV infection[9].

In this study 14 patients were diagnosed to have Cryptococcal meningitis based on CSF India ink preparation. Hence a number of patients with Cryptococcal meningitis may have been missed in this study. Levy *et al.*; [8] reported 16 patients with Cryptococcal meningitis in their study, one of who developed an intracerebral cryptococcoma.

Bisburg *et al.*; [10] reported 10 cases of CNS TB in patients with AIDS. Tuberculosis is wide-spread and rampant in our country, with a large segment of the population being constantly exposed to infection from open infected cases, irregular, incomplete therapy often results in partially treated and resistant cases. The poor hygiene and poor socio-economic states only compounds the problem. This accounts for the very high incidence of tubercular infection in HIV patients in our country. This is in contrast with the developed world where TB was almost eradicated and only the advent of HIV infection has seen the re-emergence of TB in the population.

#### CONCLUSION:

Meningitis was the commonest manifestation comprising of 14 cases of Cryptococcal Meningitis and 12 cases of Tubercular Meningitis.

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