



Original Research Article

A Profile of HIV patients with CNS manifestations: A descriptive study

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ABSTRACT

Keywords

HIV,
Neurological
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Approximately 60% of the AIDS patients have neurological symptoms and 80-90% is found to have neuro pathological abnormality at biopsy. The pattern of neurological complication in HIV infection in India is different from that of western countries. A descriptive study was carried out among 50 patients with CNS manifestations at a Tertiary care hospital and data was collected by interview technique. Among total study subjects, 60% were males and 40% were females. It was noted that 80% of patients had meningeal irritation and 8% had signs related to cerebellum.

Introduction

According to the UNAIDS and WHO reports there are approximately 39.4 million people living with HIV/AIDS worldwide¹. It is estimated that 90% of HIV infected persons live in the developing countries with Indian estimates being 5.1 million^{2,3}. The first case of HIV/AIDS in India was identified in Chennai in 1986⁴. And 24 years later, around 2.4 million Indians are HIV positive⁵. According to the national AIDS Control Organization HIV prevalence rate in India is 0.34% (0.25%-0.43%)⁶

HIV-infected individuals can experience a variety of neurological abnormalities due either to opportunistic infections and neoplasm or to direct effects of HIV or its products. With regard to the latter, HIV has been demonstrated in the brain and CSF of infected individuals with and without Neuro

psychiatry abnormalities. The main cell types that are infected in the brain in vivo are those of the monocyte/macrophage lineage, including monocytes that have migrated to the brain from the peripheral blood as well as resident microglial cells.

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 either leads to 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 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 complications⁷

Neurological disorders cause considerable morbidity and mortality in patients with AIDS. At least 40% of HIV-infected patients develop neurological symptoms during the course of their illness. Central nervous system (CNS) is infected during the primary infection itself and the CNS becomes a watershed for HIV infection thereafter. The neurologic problems that occur in HIV-infected individuals may be either primary to the pathogenic processes of HIV infection or secondary to opportunistic infections or neoplasms. In a majority of AIDS patients, autopsies demonstrate CNS pathology⁸. Pathologies include direct HIV-1 infection of the brain, opportunistic infections, and malignancies. Determining the specific cause of CNS lesions in the individual

patient may be difficult, but it is essential for the prescribing of appropriate therapy. Although in many cases clinical and radiographic features alone are not sufficiently distinct to allow definitive diagnosis, routine brain biopsy is not recommended for several reasons.

Symptomatic neurologic dysfunction develops in more than 50% of individuals infected with human immunodeficiency virus (HIV)⁹ and about 10% experience neurologic symptoms as the initial manifestation of acquired immunodeficiency syndrome (AIDS)¹⁰. Neurologic disorders associated with HIV infection include central nervous system (CNS) infections, neoplasms, vascular complications, peripheral neuropathies and myopathies¹¹. Neurologic dysfunction is an important cause or a strong marker of poor prognosis in late HIV infection¹².

Neurological complications of HIV disease can be seen in 20% of outpatients in HIV clinics and almost half of HIV patients being treated as inpatients¹³. Since many of them are caused by treatable pathogens, it is important to understand the spectrum of neurologic diseases in India. They can be categorized into opportunistic infections, malignancy, AIDS related dementia, and vasculitis/stroke. Cryptococcal meningitis (CM) has been reported as the most common opportunistic infection of the CNS of Indian patients with HIV¹⁴.

Methodology

This was a descriptive case series study carried out in a tertiary care hospital for a period of one year. Study subjects were the HIV positive patients attending ART center for treatment. After obtaining the written informed consent, data was collected in a pretested semi structured questionnaire.

Totally data was collected from 50 patients. The patients seriously ill and not giving their consent for participation in study were excluded. Data included basic socio demographic characters and signs and symptoms of CNS. The confidentiality of the information of patients was maintained. Data was collected in Microsoft excel and was analyzed in SPSS

Results and Discussion

Among total study subjects, 60% were males and 40% were females. Among males, majority of them were in the age group of 35 – 44 years (40%), followed by 25-34 years (26.7%), more than 45 years (20%) and less than 25 years (13.3%). Among females, majority of them were in the age group of 35 – 44 years (40%), followed by more than 45 years (30%), 25-34 years (20%), and less than 25 years (10%). This difference was not found to be statistically significant.

Heterosexual mode of transmission was the commonest mode of HIV transmission among study subjects.

The most common neurological symptom found among study subjects was head ache (60%) followed by sensorium (50%), FND (24%).

It was noted that 80% of patients had meningeal irritation and 8% had signs related to cerebellum. Abnormal HMF was found among 48% of patients. Cranial nerves involvement was found among 16% of patients. Gait was affected among 10% of patients

Motor system was involved in 20% of patients. This study was intended to reveal the pattern of CNS symptoms and signs in HIV positive patients attending Tertiary care hospital. This study included 50 patients

with CNS manifestations.

In the present study, majority of study subjects were in age group of 25 – 45 years. Mc. Arthur et al¹⁵ in their study of 186 patients found the age ranging from 18 to 72 years with a mean of 36 years for males and 38 yrs for females. Snider et al¹⁶ in their study of 50 cases reported the age range from 16 to 69 years in their study group. Millogo et al¹⁷ at in their study in Burkina Faso reported mean age of 35.7 years.

Predominantly heterosexual transmission was observed. The various routes of transmission in the multiple routes transmission group of patients were blood transmission, surgery and contact with CSWs in various combinations. Multiple partners and contact with CSWs was the cause of heterosexual transmission, as it is found in other studies in this part of India^{18,19}. This is in contrast to the western studies where homosexual transmission is more common^{22,15}.

The most common neurological symptom found among study subjects was head ache followed by sensorium, and FND. Mc. Arthur et al¹⁵ reported that 10% of all AIDS patients in their study presented with complaints referable to the nervous system. Levy et al²⁰ 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 infection²¹

Fever and weight loss were common presentation in HIV infection²². Even in patients without overt focal brain dysfunction, headache can be a presenting symptom of focal parenchymal diseases when they involve “non-eloquent” brain areas or are characterized by small

multifocal lesions. However, when CNS dysfunction is truly absent, headache most commonly relates to either meningitis or a poorly understood condition sometimes referred to as HIV headache²³. In the study by Millogoet at¹⁷35 % of the patients had FND.

In Conclusion, a neurological manifestation was more commonly found among middle age group and Meningitis was the most common sign found among patients.

Table.1 Age sex wise distribution of study subjects

| Age group | Male | Female | Total |
|---------------|------------|------------|------------|
| < 25 years | 04 (13.3%) | 02 (10.0%) | 06 (12.0%) |
| 25 – 34 years | 08 (26.7%) | 04 (20.0%) | 12 (24.0%) |
| 35 – 44 years | 12 (40.0%) | 08 (40.0%) | 20 (40.0%) |
| >45 years | 06 (20.0%) | 06 (30.0%) | 12 (24.0%) |
| Total | 30 (100%) | 20 (100%) | 50 (100%) |

Table 2 Distribution based on Mode of transmission

| Mode of transmission | Frequency | Percentage |
|----------------------|-----------|------------|
| Heterosexual | 42 | 84% |
| Others | 04 | 08% |
| Unknown | 04 | 08% |
| Total | 50 | 100% |

Table.3 Distribution based on Neurological symptoms

| Neurological symptoms | Frequency | Percentage |
|-----------------------|-----------|------------|
| Headache | 30 | 60% |
| FND | 12 | 24% |
| Sensorium | 25 | 50% |
| Convulsions | 08 | 16% |
| Sensory | 08 | 16% |
| Behavioral | 03 | 06% |

Table.4 Distribution based on CNS signs

| CNS signs | Frequency | Percentage |
|------------------|-----------|------------|
| HMF | 24 | 48% |
| Cranial nerves | 08 | 16% |
| Abnormal fundus | 09 | 18% |
| Motor system | 10 | 20% |
| Sensory system | 03 | 06% |
| Gait | 05 | 10% |
| Cerebellar signs | 04 | 08% |
| Meningismus | 40 | 80% |

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