INTRODUCTION

A variety of neurocognitive disorders may develop in HIV patients. These HIV associated neurocognitive dysfunction (HAND) ranges from asymptomatic neurocognitive impairment (ANI) to mild neurocognitive disorders (MND) to HIV associated dementia (HAD). Cognitive impairment may impact medication adherence which will ultimately affect morbidity and mortality. With antiretroviral treatment, the frequency of dementia has decreased, but milder forms of impairment remain highly prevalent and increase with age. With increase in age of HIV positive population due to antiretroviral therapy, prevalence of cognitive disorders is likely to be higher among older HIV positive patients. HAND may become the most common cause of dementia in the future. Studies conducted in HIV patients estimate that the prevalence of neurocognitive dysfunction (based on neuropsychological assessments) ranges from 20–37%, even with treatment.

Cognitive impairment may impact medication adherence which will ultimately affect morbidity and mortality. Hence it is important to detect it early and follow effective strategy to improve adherence in these patients. Cognitive impairment may also affect workplace functioning of HIV patients. Various neuropsychological tests can be used to diagnose HAND. However, administration of the entire
neuropsychological test battery is difficult in routine clinical practice because it is time-consuming and needs manpower. The International HIV Dementia Scale (IHDS) is a rapid screening test that can be used in an outpatient setting to screen asymptomatic HIV patients for HAND. Very few studies have been published from India that have used IHDS scale to assess HAND in HIV patients. Hence this study was undertaken to evaluate neurocognitive disorder among asymptomatic HIV patients.

MATERIALS AND METHODS

The study was approved by institutional ethics committee of Kasturba Medical College, Mangalore.

Study population, study design and setting
A facility based cross-sectional study was carried out among 101 People Living with HIV (PLHIV). The study was carried out at Kasturba Medical College hospital (tertiary health care centre) in Mangalore (South India).

Sample size was calculated based on expected proportion of neurocognitive impairment among HIV patients as 38% based on previous studies with precision of 10% and confidence interval of 95% and 80% power, the minimum sample size was 91. Taking non response error as 10% the final sample size was 101. Sampling method was by convenient sampling.

Inclusion criteria were: documented HIV-positive status (diagnosed at Integrated Counseling and Testing Centre (ICTC)), age 18-60 years, ambulatory patients and patients who gave written informed consent. Exclusion criteria were patients who had central nervous system opportunistic infections, history of head injury, current opportunistic infection, history of psychiatric disorder and history of substance abuse. The study population for this analysis included HIV positive individuals (currently WHO stage 1 or 2).

Demographic data, medical history and physical examination were documented using a pretested proforma. CD4 count result was extracted from case records. Neuropsychological testing was conducted using the International HIV Dementia scale (IHDS). IHDS consists of 3 subsets: timed finger tapping (measures motor speed), timed alternating hand sequence test (measures psychomotor speed) and recall of 4 items in 2 minutes (assesses memory registration and recall). Each of these subtests is rated on a scale of 0–4. The cut-off value for defining cognitive impairment was 10.

Statistical analysis
Data collected was analyzed using SPSS Version 11.5. Student’s t-test was used to analyze the quantitative data and chi square test was done to analyze qualitative data. A ‘p’ value less than 0.05 was taken as statistically significant.

RESULTS

Out of the 101 patients studied, 69 (68.3%) were males and 32 (31.7%) were females. Among these patients, 88 (87.1%) were receiving antiretroviral therapy (ART). 84 (83.2%) patients were in WHO stage 1 and 17 (16.8%) were in WHO stage 2. 91 (90.1%) patients had HAND and the remaining 10 (9.9%) did not have HAND (Table 1).

Comparison of baseline characteristics showed statistically significant differences in the baseline CD4 count, gender and educational level between patients with or without HAND (p=0.02, p=0.006, p=0.03 respectively) (Table 1).

Table 2 shows the distribution of patients with or without HAND based on age. As the age advances, percentage of patients having HAND also increased. Below 40 years of age group, 82.9% developed HAND whereas in age group of above 40 years HAND was observed in 95% of patients.

As shown in Table 3, there were differences between those with normal cognition and those with HAND for IHDS total score and for IHDS component score.

DISCUSSION

The present study was undertaken to evaluate neurocognitive dysfunction in HIV patients using IHDS. In our study among 101 patients, 91 had HAND. We used IHDS to assess neurocognitive dysfunction in our study. The IHDS does not require patients to be proficient in English, can be performed in 3-5 minutes in an outpatient setting and requires no special instruments.

Prevalence of cognitive impairment differs substantially among studies owing to different methodological approaches and study populations. In a study done in Tamil nadu, out of 33 patients 21 (63%) patients had a score less than 10 using the IHDS scale. Chan LG et al have mentioned that that one in five HIV-positive patients from a South Asian population can be expected to have HAND. Robertson K et al reported that the prevalence of HAND is approximately 37%. In a study done by Oshinaike OO et al in 250 HIV patients, 34.4% had clinically evident neurological disease out of which 53% had HAND. Oshinaike OO et al have used the IHDS scale (cutoff score of 10) to identify HAND among 208 HIV patients. In their study 113 patients (54.3%) had HAND. In a study done by Atashili et al 85% of subjects screened positive for dementia (≤10 on IHDS). Similar results (80%) were
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The prevalence of ANI/MND ranges from 26 to 76% and that of HIV-associated dementia (HAD) from 1-35%.

In our study the screen rate for HAND was high. We strongly suspect that the prevalence of HAND in Indian population is high as many patients present with advanced disease with low CD4 cell counts. Atashili et al. have mentioned that high screen positive rate could also be due to the IHDS performing poorly. They feel that antiretroviral drugs can reduce psychomotor speed and hence affect IHDS scale.

Risk factors for HAND are low CD4 cell counts, anemia, low body mass index, increasing age, and female gender. Chan LG et al. have mentioned that patients with HAND tend to be older, have less education and low baseline CD4 counts (CD4 <200 cells/ml). The mean age in the present study was found to be higher in HAND group (43.4 years) as compared to normal cognition group (37.5 years). Comparison of baseline characteristics showed statistically significant differences in the baseline CD4 count between patients with or without HAND.

Our study had some limitations. Our sample was predominantly urban. We did not use gold standard neuropsychological tests to confirm HAND in our study. But our main intention was to screen HIV patients for HAND using a simple and rapid screening tool.

To conclude, there was high prevalence of HAND among HIV positive individuals in our study. Routine screening for HAND must be done by physicians involved in HIV care. IHDS is a simple screening tool which can be used to assess HAND even in an outpatient setting. More studies using IHDS scale should be done in our country. Failure to identify cognitive deficits may affect successful management of the disease.

REFERENCES


Authors Contribution:

BA – The treating physician, Concept and Design of the study, analysis and interpretation, manuscript preparation, revision of the manuscript and literature search; DM – The treating physician, analysis and interpretation, manuscript preparation, revision of the manuscript and literature search; JTR, SR – The treating physicians, Concept and design; SP – data collection; UB – analysis and interpretation, manuscript preparation, statistical analysis; MC, SM – Proof reading, editing and revision of manuscript.

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