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Clinical profile of HIV/AIDS in geriatric patients seeking ART – A Longitudinal study

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Abstract

Aim: To study the clinical profile of HIV/AIDS in geriatric patients seeking ART.

Material and Methods: This study was conducted in District Hospital, Belgaum. Information, which was collected from 372 HIV/AIDS patients seeking ART during the period of January and February 2010 and were followed up for one year using predesigned, pretested questionnaire with their informed written consent.

Results: Out of 372 patients followed only 2.1% were more than 65 years. Majority were male and belonged to low socioeconomic status and were illiterates. 37.5% presented with opportunistic infections and all of them were tuberculosis patients who were ambulatory. With Wilcoxon Sign Rank test improvement in baseline to 1st visit CD4 count (p=0.075) and baseline to 2nd visit CD4 count (p=0.043) was statistically significant. One death was reported during the study period. Almost half of them had side effects to ART. One patient stopped ART voluntarily.

Conclusion: Treatment was delayed even though patients were diagnosed earlier. Tuberculosis was the most common HIV co-infection seen. Prognosis was good with improvement in CD4 count and with good adherence to ART. Dropouts should be identified early and reasons for dropouts need to be studied.

Keywords: HIV/AIDS, Geriatric patients

Introduction

Asa result of growing awareness, implementation of prevention strategies, and the availability of potent antiretroviral therapy, especially in developed countries, the course of the HIV epidemic has dramatically changed verthe past three decades. Current epidemiologic data depecits changes in the demographics of the HIV population. As the rate of newly detected HIV infections in the elderly rise, clinician's should become aware of increasing need to balance HIV care and the management of co-morbid conditions which are commonly associated with aging.

Human immunodeficiency virus type 1 (HIV-1) is an RNA virus belonging to the group of lentiviruses. HIV is transmitted when the virus enters the blood stream by direct contact or penetration of mucosal surfaces. Infection of human cells begins with the attachment of HIV to CD4 and others Co- receptors likeCCR5 and CXCR4 on the surface of the cell. Inside the cell, viral RNA is transcribed to DNA by the HIV reverse transcriptase. Viral DNA then integrates into the host cell genome and uses host cell mechanisms to produce viral progeny. HIV specifically targets and infects CD4+ cells, which includes T-helper lymphocytes and other mononuclear cells, ultimately leading to the destruction of these important mediators of the immune system. Later, the persistant destruction of CD4 cells by HIV progresses to the late stage of HIV infection known as acquired immunodeficiency syndrome or AIDS.

A CD4 count of<200 cell/mm^3, CD4percentage of 14%, or the presence of an opportunistic infection or HIV-associated malignancy is defined as AIDS.

Thymus is one of the prime organs involved in the development of umanimmune system and serves as the primary location for T lymphocyte maturation. Lymphocytes are genetically diverse, and function as naïve T cells responding to new antigenic exposures or as memory T cells responding to antigens, which the body has previously been exposed to. The activation of CD4+ T-helper cells triggers an immune response through T cell differentiation and proliferation; activation of B cells resulting in antibody development and secretion; stimulation of other effector cells, such as CD8+ cytotoxic T cells and macrophages, through cytokine release; and/or delayed-type hypersensitivity.

With age, involution of the thymus occurs with age, and the thymic volumes are significantly lower in persons 45 years above as compared to younger adults. However, the production of nive T cells declines with increasing age and is only minimal after age 55.[4]. Increase in age is further associated with decreased T cell functionality, reduced memory T cell populations, and fewer numbers of properly functioning CD8+ cytotoxic T cells. These reasons may explain why elderly persons are more prone to new infections, demonstrate less than optimal response to immunizations, or manifests allergy to skin tests such as with purified protein derivative (PPD).

Research studies have demonstrated that age is an independent predictor of clinical progression in HIV, it has been noticed that for every 10-year increase in age at time of HIV infection, the overall mortality rate increased by 43%. Apart from the age at which the

perso gets infection, the time since infection is positively correlated with increased mortality in elderly patients (ages 45 to 55 years old) who have the highest death rate as compared to younger persons less than 45 years old. Rapid progression to AIDS and decreased survival in older HIV-infected patients has also been confirmed.[7]

About 40,000 new HIV infections occur every year. Of the new HIV/AIDS cases reported to the Centers for Disease Control and Prevention in 2005, over 15% were 50 years and above while nearly 2% of new diagnoses were in patients over 65 years of age. Late HIV testing leads to increased number of newly reported infections in the older adult. Major chunk of cases are not acute infection, but rather chronic, long standing HIV infection.The most common definition of late presentation for treatment is a CD4 cell count below 200 cells/mm3, although other thresholds have ranged from 50 to 350 cells/mm[3,9].

The report given by CDC on HIV/AIDS Surveillance reveals other interesting trends among the older HIV population. Survival rates after HIV/AIDS diagnosis in older patients is reduced. Only 60% versus 80% survival in HIV-infected adults aged 25[8]. Survival beyond 12 months after an AIDS diagnosis also decreased as age at diagnosis increased among persons at least 35 years old, with the lowest survival rate among those over 65 years old. Between 2001 and 2005, the estimated number of deaths among persons with AIDS increased in those 45 years and older, with a 28% increase in persons 50 years and older and 18% increase in persons 60 years and older.

The rise in overall number of persons 50 years and older newly diagnosed with HIV or living with HIV/AIDS may be a result of late diagnosis or due to the effectiveness of potent therapy currently available to treat HIV infection.

Initiation of ART in patients >50 years of age regardless of CD4 cells counts warrented due to concerns about decreased immune recovery and increased risk of serious non-AID Sevents. Presently, there are no separate recommendations on ART regimens on basis of age. The choice of regimen depends on the patient's other medical conditions and medications. Frequency of monitoring parameters of ART effectiveness and safety for adults age>50 years are similar to those for the general HIV infected population[10].

Complex dosing requirements, high pill burden, inability to access medications because of cost or availability, misunderstanding of instructions, depression, and neurocognitive impairment and poor adherence are some of the key management issues in thesepatient[1].

This one year follow up study was done to know the clinical profile of HIV/AIDS in geriatric patients seeking ART in Belgaum District, Karnataka with respect to their CD4 count improvement, adherence and opportunistic infections.

Methodology

Material and Methods: This study was conducted in District Hospital, Belgaum. All patients seeking ART at District hospital in the month of January and February 2010, who met the inclusion criteria were enrolled and followed up for 1 year. Data was collected from 372 HIV/AIDS patients by using a questionnaire which is predesigned, pretested after obtaining informed written consent. Self-reported symptoms and treatment seeking behaviour of study subjects were recorded for health. Physical examination was done by the investigator at the health centre. For the laboratory investigation, patients were referred and reports were collected. Follow up visits were done according to the NACO guidelines.

HIV/AIDS diagnosed patients who were eligible for ART were included, while patients who are already on ART and patients who are not willing for CD4 count were excluded.

The data thus collected was entered in a specific programme developed on Microsoft excel 2007 software. Analysis was done through Statistical Package for Social Science (SPSS 16.0) software program for Windows. Ethical clearance was obtained from the institutional ethics committee.

Results

Out of 372 HIV diagnosed patients who were newly started with ART in the month of January and February 2010, only 2.1% of them were in the age group 65 yrs and above. Majority of them i.e. 87.5% were males among whom 75.0% were illiterate and belonged to low socio economic status. About 62.5% of them were diagnosed to have HIV in the year 2009 but were not started with ART as they were not eligible and few were not willing. Around 62.5% of them presented with multiple symptoms and were admitted in the hospital for different reasons and later were referred to ART centre.

Majority of them were in stage III & II i.e. 37.5% respectively and remaining 25.0% were in stage I. Opportunistic infections(OI) other than TB were seen in 37.5% of patients and tuberculosis was seen in all of them. All the patients with OI were ambulatory and few were bed ridden, when brought to the hospital.

There was no much improvement in baseline BMI before and after start of ART. Baseline BMI mean being 16.7±2.3 and mean BMI at the end of one year after start of ART being 16.45±2.3which was statistically not significant.

Improvement in baseline CD4 count was statistically significant after 6months and at the end of 1year of start of ART ($p<0.05$) with Wilcoxon Sign Rank test which showed a good prognosis.

More than 50% of patients developed side effects to ART. Only 25.0% of them adhered to the treatment .One death and one patient stopped treatment voluntarily in the study period.

Discussion

The reasons for why the elderly population is at risk of HIV infections are many,

1. There are only few HIV prevention campaigns that do target the elderly.
2. Elderly people are oblivious towards the risk of HIV infection.
3. Diagnosis of HIV may not be considered in older patients by health care providers and therefore may not undertake HIV testing or may attribute symptoms of HIV to 'normal ageing'.
4. Contrary to the belief that elderly don't have sex many older people lead sexually active lives. Studies of sexual activity in people aged over 50 showed that 81.5% were involved in one or more sexual relationships including sex with prostitutes[11], and a national US survey suggested that only a small minority of people over 70 consistently used condoms[12]. Older women may be especially at risk because age-related vaginal thinning and dryness can cause tears in the vaginal wall[13].
5. The increased frequency in foreign travel makes access to countries with thriving sex industries easier.
6. The sex lives of many elderly males has been extended because of usage of potency drugs
7. Despite our misconceptions, intravenous drug abuse is a contributor to HIV transmission in older people.[4]
8. The elderly population hide their diagnosis because HIV may be perceived as greater social stigma.

Specific treatment guidelines are currently not available that focus on management in the elderly HIV-infected. Additionally, there is limited information on the efficacy and safety of selected antiretroviral regimens for older patients.

CD4 cell recovery may be limited in elderly HIV-infected patients, even with the initiation of antiretroviral therapy. 3,015 HIV-infected patients were studied, of whom 13% were 50 years and older, the mean CD4 cell counts rose significantly within the first six months of ART. However, mean CD4 cell count increases were significantly higher in younger patients as compared to older patients when stratified by baseline HIV viral load and CD4 cell counts[6]. Manfredi and Chiodo[15] had demonstrated similar results where patients 55 years and older showed a significantly blunted CD4 cell count response compared to the response seen in patients 35 years and younger. A more recent study showed that initial CD4 cell count response in older patients was slower during the initial phase of ART, but after 3 years of ART, the CD4 cell counts were not significantly different from that of younger patients[6].

Possibly due to better medication compliance, older patients tended to achieve better virologic control compared to younger patients[7,6,16] as similarly observed in our study.

Whether the HIV-infected elderly are at higher risk for adverse side effects from ART is less well documented. Medication side effects in general tend to be higher in older patients[8], and may be related to age-associated declines in hepatic and renal function.

Limited CD4 cell recovery in elderly HIV-infected patients may be due to age-associated decrease in thymic function and therefore slower response[9], or possibly as a result of having lower CD4 cell counts at baseline[7]. In contrast, there are some studies suggesting that CD4 cell count rises and virologic responses are not dissimilar between older and younger. HIV-infected patients[20,21].

In HIV therapy, medication adherence is a very important determinant for the success or failure of treatment[2]. Unlike medication therapy for other infections, medication non-compliance in HIV also creates multi-drug resistant HIV that further complicates treatment options. Antiretroviral adherence studies indicate that greater than 95% adherence to ART provides optimal efficacy while limiting viral rebound and development of HIV drug resistance, although at least 80% adherence has been used conventionally in non-HIV medication adherence studies[3,24,25].

It is likely that older patients being seen for routine medical care by general internists, geriatricians, or family practitioners may be involved in case finding for HIV infection. Some of those patients will test positive for HIV infection. It is important for generalists to recognize certain signs and symptoms that may be suggestive of ongoing HIV infection. HIV testing in the elderly should be offered and counseling provided. HIV infection should be suspected and worked-up in patients with co-morbid conditions that can indicate an increased risk for HIV infection.

Conclusion

HIV is on the increase in older people. The reasons behind this increase are multiple, health care providers should be aware that, being old does not automatically equate to being at low risk.

ART has significantly prolonged survival time of individuals with HIV and early diagnosis is the key to ensuring that patients receive optimal treatment aged patients do have good immunological and virological responses to ART, but studies consistently show that older people are being diagnosed late on in HIV disease, which impacts negatively upon their prognosis. All patients who are at risk of HIV infection should be tested.

Late presentation of HIV infection is very common

and does not appear to be improving in older adults. The consequent increase in hospitalizations also results in increased health care costs. Most of the HIV transmissions are from individuals unaware of their status. Prompt HIV diagnosis could be achieved through a policy that enables HIV test to be offered routinely alongside other investigations.

Till date, there are no guidelines available to specifically address the needs of the elderly HIV-infected patient. Additional research work is urgently needed for better understanding the impact of aging on the course of HIV infection, to develop and implement effective education and prevention measures, and to determine efficacy and safety of ART in geriatric HIV-infected patient.

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