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Prevalence and Clinical Characteristics of Acute Flaccid Paralysis Associated with Hiv Related Patients: The Experience in Northeastern Nigeria

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Abstract

Background: Despite extensive investigation over the last several decades; no single cause of acute flaccid paralysis has been identified in which it's Presence of has been seldom reported in Human Immunodeficiency Virus (HIV) patients. The aim of this study was to evaluate the prevalence and clinical characteristics of AFP in HIV related patients.

Method: It is a retrospective study. A total of 221 patients who were diagnosed as having HIV were studied from January 2003 to December 2009. The descriptive statistics of mean/SD and percentage were used to summarize the data (age, sex, HIV status and clinical presentations) obtained and inferential statistics of independent t-test was used to compare the mean age between sexes.

Result: The age range was 10 to 60 years (mean, 32.38 ± 10.36 years). The female and male participants were of similar age ($p<0.05$) and majority were < 40 years in both sexes. The commonest individual clinical characteristics of AFP among the participants were gradual onset 90, distal to proximal weakness progression 74, hyporeflexia 146, fever 66 and sensory loss 73, and paraplegia 91. The mean duration of progression of weakness was (10.83 ± 8.58) days.

Conclusion: This population-based study found that HIV is strongly associated with AFP.

Introduction

Human immunodeficiency virus (HIV) invades the central nervous system early [1,2]. Neurological manifestations may result from opportunistic infections, neoplasia, the immunological and metabolic response to HIV, iatrogenic causes or co risk factors (e.g., injection, drug use), or they may be related directly to HIV itself [2,3].

Although neurological complications in HIV infection are common [4] and neurological dysfunction as the first manifestation of AIDS has been found in 10 to 20% of symptomatic HIV infections [5]. The presence of Acute Flaccid Paralysis (AFP) has been seldom reported. Despite extensive investigation over the last several decades, no single cause of AFP has been identified. Instead, the condition appears to be triggered by a variety of infectious agents, including wild poliovirus [6], non-polio entrovirus [7], *campylobacter jejeni, mycoplasma pneumoniae*, Epstein-Barr virus, and HIV and certain non infectious antigen as in case of Guillian-Barré Syndrome [8,9].

Deficiency in the immune system renders HIV infected patients more susceptible to wide variety of opportunistic infections and malignancies [10]. Complications such as chest infection, endocarditis, stroke and peripheral neuropathy are seen in HIV infected patients that result in functional limitations that lead to muscle atrophy, and reduce muscle physiological properties as seen in other non-HIV infected persons. HIV/AIDS is one of the major causes of mortality in sub-Saharan countries and the survivours end up incapacitated sometimes with disability; nevertheless, this can affect quality of life [11]. The magnitude of the HIV/AIDS epidemic in Africa has not been documented but available data projections suggested that the epidemic remains uncontrolled and still on increase in sub-Saharan Africa [12]. No national study has estimated the rate of AFP associated with HIV related patients in Nigeria. However, the feasibility of implementing AFP surveillance as complication associated with HIV in Nigeria will depend in part on the background rate of HIV/AIDS infection and to standardized case investigation for classification.

Diseases associated with HIV infection in different geographic areas may not be the same due to variation in the pathological factors present in the environment and difference in the genetic susceptibility in the host [13]. Therefore, this current study was designed to provide a clear prevalence and clinical characteristics of AFP associated with HIV related patients.

Method

Two hundred and twenty one patients (88 males and 133 females) with age range between 10 to 60 years were studied at the University of

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Maiduguri Teaching Hospital (UMTH), Maiduguri in North Eastern Nigeria from January 2003 to December 2009.

These patients were consented before they underwent HIV serology test based on the clinical suspicion of HIV/AIDS. Among the 250 patients studied, 29 cases had incomplete data and were excluded and the remaining 221 cases constituted the basis of the present study. The clinical and laboratory investigations of these 221 patients confirmed the presence of the HIV and were referred by the physicians to the Department of Physiotherapy of this hospital. The case notes of the participants were reviewed to obtain data such as age, sex, HIV status and the clinical presentations. Ethical approval for the study was sought and obtained from UMTH ethical committee before commencement of the study. The descriptive statistics of means, standard deviation and percentage were used to summarize the data (age, sex, HIV status and the clinical presentations) obtained and inferential statistics of independent t-test was used to compare the mean age between the male and female participants at alpha level (0.05).

Result

Two hundred and twenty one participants (88 males and 133 females with mean age 33.86 ± 10.50 and 31.41 ± 10.19 respectively) who presented with paralysis related with HIV infection with no prior history of trauma or fall before onset participated in the study. The total mean age of the participants was 32.38 ± 10.36 years. There was no significant difference between the mean age of both sexes ($p<0.05$) and majority were seen below the age 40 years in both sexes. The maximum number of patients was seen in 31-40 and 21-30 years age groups among males and females respectively (table 1).

The cause of paralysis in such patients in this present study is shown in table 2.

The commonest individual clinical characteristics of AFP among the participants were gradual onset 90, distal to proximal weakness progression 74, backache 69, hyporeflexia 146, muscle atrophy 34, fever 66 and sensory loss 73, and paraplegia 91 as residual paralysis (table 3).

Table 4 shows the mean duration of progression of weakness in days (10.83 ± 8.58).

Discussion

Before the HIV epidemic in the 80's, poliomyelitis and Guillian-Barré Syndrome (GBS) were seen to be the major causes of AFP. In this present study, high prevalence of AFP in HIV infected patients was observed among the sexually active age group in both sexes.

Age (years)	Males HIV +ve	Females HIV +ve
10 – 20	9	17
21 – 30	26	53
31 – 40	31	36
41 – 50	15	22
51 – 60	7	5
TOTAL	88	133

Table 1: Age and Sex Distribution of HIV Seropositive Patients

CAUSE	n
Pott's disease	33
Transverse myelitis	8
Meningitis	15
*Non-specific	146
B_{12} deficiency	19
Total	221

*Non specific = (AFP)

Table 2: Causes of Paralysis in HIV Positive Patients

Clinical	Frequency	(%) n= 146
Onset Gradual	90	61.6
Sudden	56	38.4
Pattern of progression Distal to proximal	74	50.7
Proximal to distal	72	49.3
Hyporeflexia	146	100
Backache	45	30.8
Neckache	17	11.6
Gibbus	0	0.0
Muscle atrophy	34	23.3
Fever	66	45.2
Sensation Sensory loss	73	50.0
Paraesthesia	34	23.3
Nurmbness	39	26.7
Residual paralysis Monoplegia	20	13.7
Paraplegia	91	62.4
Triplegia	0	0.0
Quadriplegia	35	23.9

Table 3: Clinical Characteristics of Afp In HIV Seropositive Patients

Days	<1	1 - 5	6 - 10	11 - 15	16 -20	>22
N	11	41	34	28	20	12

mean= 10.83
SD= ± 8.58

Table 4: Progression of Muscular Weakness in Afp In HIV Seropositive Patients n=146

The investigation has shown that non specific (idiopathic) was the commonest conditions causing paralysis in HIV positive patients. This reiterates the importance of standardized clinical investigation of all cases of AFP associated with HIV related patients. This can be achieved only through a well organized coordination between epidemiologist, neurologist, immunologist, virologist, and specialist in rehabilitation medicine (physiotherapist).

Nevertheless, selective characteristics of AFP from those patients; sudden to gradual onset of muscle weakness in proximal to distal and distal to proximal order with associated fever, hyporeflexia, sensory loss and muscle atrophy with paraplegia as residual paralysis were highest prevalent clinical characteristics reported in this study which are similar to previous description of non-polioenterous virus infection [7] and GBS [14] in other part of the world. The muscle atrophy could be attributed due to prolong immobility; paraplegia may be due to high prevalence of pott's disease as cause of AFP and presence of fever at onset of weakness was minimal not in higher proportion of cases than normal. Several factors may have contributed to this difference: delay in clinical evaluation when secondary infection particularly in the respiratory tract, could be present of environmental or socioeconomic factor that increase the risk of concomitant opportunistic infection. The dire economic situation and political chaos in the developing countries like Nigeria has resulted in patients being seen in greater number with late stage HIV/AIDS associated complications.

The mean duration of muscle weakness progression in this surveillance study was found to be 10.83 ± 8.58 days was found which

is shorter than the average 28 days found in GBS cases in Adult [6,7,15]. This indicates that AFP in HIV related patients should represent a better prognosis rapid recovery when attending medical rehabilitation especially when the patients are placed on Highly Active Antiretroviral Therapy (HAART) and other relevant chemotherapy.

The prevalence of AFP in HIV infected patients confirmed serologically among the productive age group is also of public health importance; combination of clinical features could guide selection of patients with AFP for HIV serology testing especially among younger population and could be useful in reducing the cost incurred by the health delivery system in financially constrained developing countries. This study had several limitations; first, the specificity of the cause of AFP in some case definition was unknown. This could be attributed to inadequate laboratory facilities and diagnostic equipments in our locality that resulted into under reporting of complications.

Secondly, only AFP related hospitalization information obtained among hospital participating patients were considered. Although estimates for potential magnitude of these biases are not available, there is no evidence to suggest that any of these biases would have influenced our findings substantially.

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