

# HIV Seropositivity among Patients Presenting with Herpes Zoster Infection

Abubaker Omer Ali Abdalla<sup>1\*</sup>, Isam Mohamed Elkhidir<sup>2</sup> and Abdelgadir Ali Bashir<sup>3</sup>

<sup>1</sup>Educational Development Center, Faculty of Medicine, University of Khartoum, Khartoum, Sudan

<sup>2</sup>Department of Microbiology, Faculty of Medicine, University of Khartoum, Khartoum, Sudan

<sup>3</sup>Department of Community Medicine, Faculty of Medicine, University of Khartoum, Khartoum, Sudan

## Abstract

**Background:** Skin manifestations are usually the first presentation in HIV infection. Most common of these manifestations is herpes zoster. This study was carried out to determine HIV seroprevalence in patients with herpes zoster and to identify factors that may affect its prevalence.

**Methods:** 40 patients were included in the study after clinical confirmation of herpes zoster. Every patient was interviewed privately to assess demographic, social and medical information. Data were obtained with high confidentiality. Blood samples were collected and tested for presence of antibodies against HIV. Khartoum.

**Results:** Out of the 40 patients screened, 6 (15%) were found HIV seropositive, with significant association in patients with previous herpes zoster attack, history of traveling to endemic areas and sexually transmitted infections.

**Conclusion:** We found high prevalence of HIV in patients with herpes zoster. These results may indicate the need for early screening of herpes zoster patients to facilitate better management of HIV infection.

**Keywords:** HIV; Seropositivity; Herpes zoster; Khartoum

## Introduction

Skin manifestations are usually the first presentation in human immunodeficiency virus (HIV) infection, these manifestation may be the only sign of HIV infection in many cases [1]. Herpes zoster is the most common skin lesion in HIV patients. It results from activation of latent varicella zoster virus in dorsal root or cranial nerve ganglia after the primary infection of chickenpox. Herpes zoster presents as localized belt-like pain followed by vesicular skin rash in the affected area [2]. It is associated with depression of immunity, most importantly due HIV infection [3].

HIV infection is a global health problem that affects 33.3 million of people with 2.6 million new infections and 1.8 million deaths due to AIDS annually [4]. HIV infection has great impact on countries where it decreases life expediency of individuals and survival rate of children. In addition it has negative economic impact that leads to exhaustion of health care systems [5]. HIV control and management is a major challenge and one of the Millennium Developmental Goals that requires multidisciplinary involvement.

We carried out this study to determine HIV seroprevalence in patients with herpes zoster infection and to identify the factor that may affect its prevalence. Results from this study may help improve screening programs for early detection and efficient control of HIV infection that leads to a decrease in its related morbidity and mortality.

## Materials and Methods

This study was carried out at Khartoum Dermatology Hospital in Khartoum city.

It is the largest dermatology hospital in Sudan, and attending physicians and specialists are available at the hospital.

This is a cross-sectional analytical hospital based study to determine HIV seropositivity among patients with herpes zoster presented at the clinic between March and September 2012. Inclusion criteria included all Patients who came to the outpatient clinic complaining of herpes zoster

infection during the study period. Those who refused to participate were excluded from the study. Data were collected using a specially designed pretested close-ended questionnaire. Every patient was interviewed alone by the same trained personnel after obtaining consent to participate in the study. The questionnaire included questions about the demographic and social variables, in addition to questions on past medical history. Clinical examination was done as part of the routine examination at the clinic by a senior medical member, to confirm the diagnosis and determine the distribution of the rash. Blood samples were collected at the lab using Dried Blood Spot (DBS) technique [6] and were tested for presence of antibodies against HIV using ELISA technique [7] and confirmed by Western blot [8]. Data were collected and recorded with high level of confidentiality. Ethical approval for the study was obtained from the Hospital Research and Ethics Committee.

All collected data were analyzed using Statistical Package for Social Science (SPSS) version 19 and Excel programs.

Descriptive frequencies were used to describe the distribution of variables while Chi-square and Fisher's exact tests were used to determine the significance of association with 95% confidence interval (P value < 0.05).

## Results

A total of 40 patients were screened and 6 (15%) were seropositive

**\*Corresponding author:** Abubaker Omer Ali Abdalla, Educational Development Centre, Faculty of Medicine, University of Khartoum, Seifeldin st., Mamora, Khartoum, Sudan, Tel: +249999000811; E-mail: [abubaker.omer@gmail.com](mailto:abubaker.omer@gmail.com)

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for HIV. Of all HIV positive patients, 5 (83%) were in the age group 25- 45 years and most of them were females residing in urban areas (83%). All of them were sexually active and none of them used barrier methods during intercourse. 5 patients (83%) had history of travelling to endemic areas of HIV and only 2 patients (33%) had history of previous herpes zoster attack. Most patients had previous documented sexually transmitted diseases (67%). The head was the most affected area (67%) and only 2 cases (33%) had multi dermatomal involvement (Tables 1-5).

		Frequency	Percent
Age	less than 25 years	7	17.5%
	25 - 45 years	13	32.5%
	more than 45 years	20	50.0%
Gender	Male	21	52.5%
	Female	19	47.5%
Residency	Khartoum	24	60.0%
	outside Khartoum	16	40.0%
Marital Status	Single	10	25.0%
	Married	28	70.0%
	Divorced	1	2.5%
	Widow	1	2.5%
Educational Level	Illiterate	10	25.0%
	primary school	12	30.0%
	secondary school	12	30.0%
	university and above	6	15.0%

Half of the study samples were less than 45 years of age with 60% of them residing in Khartoum and 70% of them educated and married

**Table 1:** Frequency table showing the distribution of demographic characteristics in patients with herpes zoster at Khartoum Dermatology Hospital, 2012.

		Frequency	percent
Number of Sexual Partners	Single	22	55.0%
	Multiple	7	17.5%
	None	11	27.5%
Usage of Barrier Methods (Condoms)	Yes	0	.0%
	No	40	100.0%
Usage of Shared Lasers	Yes	5	12.5%
	No	35	87.5%
History of Travel to Endemic Area	Yes	16	40.0%
	No	24	60.0%

55% of the study sample had a single sexual partner and 40% with history of travel to endemic area while No one in the study sample had ever used condoms during sexual activity

**Table 2:** Frequency table showing the distribution of social parameters in patients with herpes zoster at Khartoum Dermatology Hospital, 2012.

Current or Previous Debilitating Condition	Yes	13	32.5%
	No	27	67.5%
Previous Attack	Yes	2	5.0%
	No	38	95.0%
Previous Sexually Transmitted Infection	Yes	11	27.5%
	No	29	72.5%
Previous Blood Transfusion	Yes	1	2.5%
	No	39	97.5%
Usage of Immunosuppressive Drugs	Yes	4	10.0%
	No	36	90.0%

27.5% of patients had previous STIs while only a single patient in the study sample had a previous blood transfusion and only two patients suffered from previous herpes zoster attack

**Table 3:** Frequency table showing the distribution of past medical factors in patients with herpes zoster at Khartoum Dermatology Hospital, 2012

Variables		No. of positives	Percent
Age	less than 25 years	0	0%
	25 - 45 years	5	83%
	more than 45 years	1	17%
Gender	Male	1	17%
	Female	5	83%
Current Residency	Khartoum	5	83%
	outside Khartoum	1	17%
Marital Status	Single	0	0%
	Married	6	100%
USAGE OF BARRIER METHODS (Condoms)	Yes	0	0%
	No	6	100%
History of Travel to Endemic Area	Yes	5	83%
	No	1	17%
Previous Attack	Yes	2	33%
	No	4	67%
Previous Sexually Transmitted Infection	Yes	4	67%
	No	2	33%
Previous Needle Injections	Yes	1	17%
	No	5	83%
Extend Of Dermatomal Involvement	Single	4	67%
	Multiple	2	33%

**Table 4:** Frequency table showing the Socio-demographic characteristics of 6 HIV seropositive patients at Khartoum Dermatology Hospital, 2012.

Variables		Test result		Fisher's Exact P value
		positive	negative	
Current Residency	Urban	5	19	0.373
	Rural	1	15	
Number of Sexual Partners	Single	3	30	0.055
	Multiple	3	4	
History of Travel To Endemic Area	Yes	5	11	<b>0.029</b>
	No	1	23	
Previous Attack	Yes	2	0	<b>0.019</b>
	No	4	34	
Previous Sexually Transmitted Infection	Yes	4	7	<b>0.039</b>
	No	2	27	
Extend of Dermatomal Involvement	Single	4	34	<b>0.019</b>
	Multiple	2	0	

Fisher's Exact Test showed significant P value (<0.05) with several variables

**Table 5:** Multiple cross-tabulation between the test results and the social and medical factors at Khartoum Dermatology Hospital, 2012.

## Discussion

This study determined the prevalence and risk factors for HIV infection in patients with herpes zoster infection in a resource-limited setting in Sudan. The HIV prevalence was 15%, this is in agreement with the prevalence in Nigeria [9], most likely attributed to the high prevalence of HIV in Africa. In contrast, studies conducted in India reported lower prevalence rates [10,11]. Similar to other studies [11,12] most affected patients were in the age group 25-45 years, representing the most productive and sexually active individuals.

We found significant association between HIV seropositivity and patient with history of travelling to endemic areas (P=0.029), previous episode of herpes zoster infection (P=0.019), documented previous sexually transmitted infections (P=0.039) and multi-dermatomal involvement (P=0.019) as in different studies [10-12].

This study however found no statistically significant association between HIV infection and patients with multiple sexual partners ( $P=0.055$ ). This may be due to religious and social barriers that prevent giving accurate information regarding sexual activities. In Sudan any sexual activity outside marriage is considered a crime punishable by law.

## Conclusion

This study showed a high HIV prevalence in herpes zoster patients. Patients with herpes zoster should be counseled about risk factors for HIV infection and when appropriate, offered HIV screening test. This would facilitate better management of HIV infection that leads to a decrease in its related morbidity and improves the quality of life of HIV-infected patients.

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