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CRYPTOCOCCOSIS AMONG HIV PATIENTS

Zeinab Hassan Dafa Elseed[1]*, Bashir Mubarak Elbashir[2], Reem Abdel-Rahaman Osman[2], Hala Ahmed Adam[2], Musa Abdalla Ali[2] and Sara Abdalla Ahmed[2]

[1]Microbiology Department, Sudan International University (SIU), Khartoum, Sudan.
[2]Microbiology Department, University of Khartoum, Khartoum, Sudan.

***Corresponding Author: Zeinab Hassan Dafa Elseed**
Microbiology Department, Sudan International University (SIU), Khartoum, Sudan.

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ABSTRACT
Background: HIV and cryptococcal meningitis co-infection is a world-wise serious condition caused by the encapsulated yeast *Cryptococcus neoformans*, it is a major health problem in most developing countries, particularly in sub-Saharan Africa causing neurological disease. **Objectives:** To investigate Cryptococcosis among HIV patients. **Methods:** A prospective study was conducted in ART centers, cryptococcosis in blood samples was evaluated by microscopic examination and culture technique. Data obtained from the patients records were then analyzed. **Results:** Among the 65 blood cultures, examination by nigrosin revealed no polysaccharide capsule of *Cryptococcus* (0%). And no growth of *Cryptococcus* upon culture (0%). One sample revealed Candida glabrata, and 25 samples (38.5%) showed non-capsulated yeasts, these findings were obtained from patients who were not on Antiretroviral Therapy (ART). **Conclusion:** This study shows that cryptococcosis among HIV patients is not frequent. Adherence to treatment with ART is recommended for HIV patients.

KEYWORDS: Cryptococcosis, HIV, patients.

INTRODUCTION
Cryptococcosis is a serious non-contagious, opportunistic infection caused by the fungus cryotococcus among immunocompromised people such as those infected with HIV virus, spreading from the lungs to the brain causing meningitis and meningoencephalitis with high mortality rate, ranging from 60-70%.[1-4] And in reduced cell mediated immunity.[5-8] *Cryptococcus* meningitis is prevalent in sub-Saharan Africa.[9-10] With the highest incidence comparing to western and central Europe and Oceania ranging from 144000 to 1.3 million cases each year.[11] The data on prevalence vary in time and space.[12] Although of the highest burden of HIV/AIDS in sub-Saharan Africa, there is no well documentation on incidence and mortality of cryptococcosis[3] The cases of cryptococcosis decrease with the use of azole antifungals.[13] And the incidence of infection of *Cryptococcus* and opportunistic infections decreased with the use of antiretroviral treatment (ART).[14-16] But there are HIV infected people still not taking ART.[17] This study is conducted to measure the frequency of *Cryptococcus* in blood samples obtained from HIV-infected patients at the ART centers.

MATERIALS AND METHODS
Patients and samples: A prospective study of frequency of cryptococcosis was conducted at the ART centers in Omdurman, Khartoum, Sudan from January 2017 to April 2017.

HIV positive people were eligible.
The following basic data were collected: age, gender and antiretroviral therapy (ART) regiment. Ethical clearance and permission to collect samples and data was given by the faculty of medical laboratory sciences (FMLS), university of Khartoum.

Laboratory methods
Venous blood samples were aseptically collected in sterile EDTA containers, and transferred to the microbiology laboratory for culture. The diagnostic tests used in this study was nigrosin microscopic observation and culture .Blood samples were cultured in brain heart infusion broth and incubated at 37°C for up to 3 weeks, each culture was centrifuged at 3000 rpm for 3 minutes. One loop-full of the deposit was used for sub-culture on blood agar and sabouraud agar, and another loop-full was used for the nigrosin microscopic examination. Blood agar and sabouraud agar were incubated at 37°C for 5 days.

The 65 HIV-infected people recruited for this study were made up of 49 Males and 16 Females giving a sex ratio of 3.1. Their characteristics are shown in table 1.

RESULTS

Characteristics of the population studied:

Number of patients		65
Age range (years)		22-50
Sex	M	49
	F	16
Antiretroviral treatment		39
Positive *C.neoformans*		0

The ages of patients were betwee22 and 50 Years. Out of 65 samples processed none of them Shown *Cryptococcus*, giving a frequency of 0% the results of the analyzed samples are shown in table 2.

Result of samples analysis		
Type of sample		**%**
	Blood	
Number collected	65	
Positive nigrosin	0	0%
Positive culture	0	0%

Nigrosin examinations of the 65 samples revealed no capsulated yeasts of *Cryptococcus* (0%). upon culture, no growth of *Cryptococcus* were identified. In one sample Candida glabrata was identified by nigrosin and showed its typical growth in blood agar and sabouraud agar from a patient that was not on antifungal treatment. 25 samples showed non-capsulated yeasts in nigrosin, and they grown in blood agar and sabouraud agar, none of those patients was undergoing antifungal therapy. 39 of the patients were undergoing antifungal therapy and showed no growth on blood agar and sabouraud agar, and nothing revealed on examination by nigrosin.

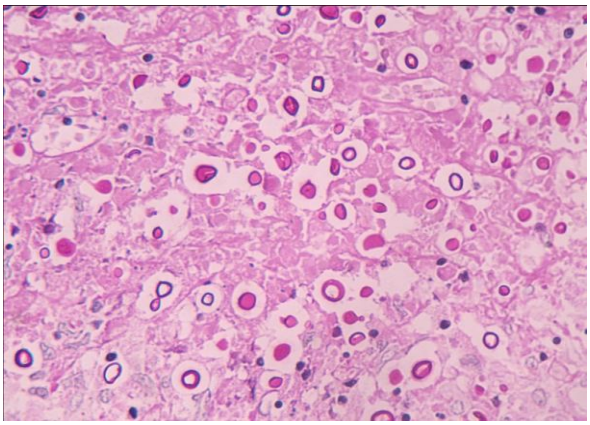

Figure 1: shows histology of skin biopsy showing encapsulated yeast of *Cryptococcus*, courtesy of A. Bonifaz.

DISCUSSION

A frequency of 0% is observed in this study which is different Comparing to the results from other studies, this shows that the prevalence of cryptococcosis infection varies from a place to another.[18-19]

There are no positive samples for encapsulated *Cryptococcus* revealed from nigrosin and there is no growth of *Cryptococcus* on blood agar and sabouraud agar, the both methods are required for an effective diagnosis of cryptococcosis and complementary for each other according to Kisenge et al[20] and Kumar et al.[21]

The samples used here was peripheral blood samples, but the most sensitive samples for isolation of *Cryptococcus* is CSF.[12]

The recruited people were HIV positive patients, but it is known that cryptococcosis infection is associated with Acquired Immunodeficiency Syndrome (AIDS), as well as with other types of HIV-negative patients and other types of immunocompromised patients.[22]

The most age group infected with HIV in this study is 22-50 years which is similar to the age range of infected people in Cameroon.[23]

HIV infected patients who were under treatment showed no fungal growth and generally the risk of infection with cryptococcosis is reduced with the trearment of ART.[11]

Also the HIV infected patients who were under treatment showed no yeast growth, so the incidence of the opportunistic infection decreased also with the treatment, and this agrees with Antinori et al.[24]

The negative finding for cryptococcosis in HIV patients in this study can be explained by the improvement in the treatment that showed no invasion in patients under treatment with *Cryptococcus* fungi.

CONCLUSION

This study shows that cryptococcosis among HIV patients is not frequent.

Adherence to treatment with ART is recommended for HIV patients.

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