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Screening For Cryptococcal Infection In HIV-infected Patients Visiting HIV clinics at two Hospitals In Addis Ababa, Ethiopia

"3rd Methods in International NeuroAIDS Research"

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BACKGROUND

- **Cryptococcosis is caused by an encapsulated yeast C. neoformans and the portal of entry in humans is the lung. Lung infection can be with or without pneumonia.**

- **HIV infection and other conditions which suppress cell mediated immunity favor dissemination from the lung foci to CNS**

- **In 2008, an estimated over 750,000 cases of cryptococcal meningitis (CM) among HIV-infected patients were diagnosed with 530,000 deaths in Sub-Saharan Africa only**

- **A strategy of screening for Cryptococcus in the blood in asymptomatic patients with CD4 < 200/mm³ may reduce morbidity and mortality from CM.**

- **Cambodia -17.7%) (Micol R, *et al.* JAIDS 2007).**
  - **1/2 of the study participants were severely immunosuppressed inpatients**
- **Thailand -9.2% (Pongsai P, *et al.* J Infect 2010).**
- **Sub-Saharan Africa**
  - **Uganda- 5.8% (Liechty *et al. TMIH* 2007).**
    - **Asymptomatic, CD4 count of < 100 mm³**
  - **South Africa -7% (Jarvis *et al.*, J Infect 2009).**
    - **Asymptomatic,CD4 count of < 200 mm³**

OBJECTIVES

- **To determine prevalence of asymptomatic Cryptococcal infection and its predictive factors in HIV-Infected patients visiting HIV clinics at two academic hospitals in Addis Ababa, Ethiopia**

METHODS

- **Study Subjects**
  - **HIV- infected patients with CD4 < 200 visiting Black Lion and ALERT HIVclinics**
- **Study design**
  - **A cross-sectional screening study was conducted from May 9- June 25, 2011**

- **Study Variables**
  - **Dependent variables**
    - **Cryptococcal antigenemia with antigen titer of positives**
  - **Independent Variables**
    - **CD4 count**
    - **Socio-demographic variable**
    - **Other opportunistic infections**
    - **Patients anti-retroviral treatment status**

- **Data Collection**
  - **Structured questionnaire on**
    - **Demographics**
    - **Height, Weight**
    - **HIV history (Date of diagnosis, most recent CD4)**
    - **Cryptococcal disease history**
    - **Patient co- morbidities , current symptoms**

- **Laboratory Testing**
  - **A Cryptococcal Antigen Latex Agglutination Test (CALAS Meridian) was performed (according to the Insert)**
  - **Equal volume of serum and pronase solution were mixed to minimize false positivity (avoids Rheumatoid Factor and other interferences)**

- **Inclusion Criteria**
  - **Age ≥18 years old**
  - **Confirmed HIV infection**
  - **CD4 cells <200/mm³**
- **Exclusion Criteria**
  - **Treated for Cryptococcal infection in last 3 months**
  - **Taking systemic antifungal agent at time of visit**

- **Data Analysis**
  - Raw data entered in to EpiData 3.1
  - Statistical analysis was performed using STATA Ver. 8.2
  - Descriptive data analysis was utilized to determine prevalence of cryptococcal antigenemia and distribution of study covariates
  - Multivariate logistic regression was done to assess relationship between risk factors and a positive cryptococcal antigen test

RESULTS

- Total of 256, 141 (55%) females and 115 (45%) males, HIV- patients with a median age of 35 years were included in this study.
- Of the 256 patients,26 (10.2%) were positive.
- The range of titer for serum cryptococcal antigen was 1:8 to 1:128

Predictor variables	CRAG Test result		Total N= 256 (%)	X^2-Value	P-value
	Negative, n (%)	Positive, n (%)			
CD4 count					
<100	67 (29.13)	14 (53.85)	83 (32.42)	11.1975	0.013
>=100	163(70.87)	12(46.15)	173 (67.58)		
Sex					
Female	131 (56.96)	10 (7.09)	141 (55.08)	3.2295	0.072
Male	99 (43.04)	16 (13.91)	115 (44.92)		
Warehouse					
No	219 (95.22)	24 (92.31)	243(94.92)	0.4103	0.522
Yes	11 (4.78)	2 (7.69)	13 (5.08)		
Age (Years)					
< 35	105 (45.65)	6 (23.08)	111 (43.36)	4.8475	0.028
>= 35	125 (54.35)	20 (76.92)	145(56.64)		
Pts with other OI					
No	179 (77.83)	22 (84.62)	201 (78.52)	0.6383	0.424
Yes	51 (22.17)	4 (15.38)	55 (21.48)		
ART Status					
Naïve	69 (30.00)	3 (11.54)	72 (28.12)	3.9385	0.047
On ART	161 (70.00)	23 (88.46)	184 (71.88)		
BMI (Kg/m^2)					
< 20	118 (51.30)	19 (73.08)	137 (53.52)	4.4514	0.035
>= 20	112 (48.70)	7 (26.92)	119 (46.48)		

- **In multivariate analysis, CD4 count < 100 Cells/ mm³ and age greater than 35 years (Median age) were independently associated with positive Cryptococcal antigenemia.**

- **CD4 count < 100 Cells/mm³ was a strong predictor of positive cryptococcal antigenemia (AOR = 3.7, P< 0.001).**

CONCLUSION

- Serum cryptococcal antigen was common in asymptomatic patients irrespective of ART status

- "All" HIV patients with CD4 count of < 200 cells/mm^3 should be routinely screened for asymptomatic cryptococcal infection

Thank you!