

**RELATIONSHIP BETWEEN PHENOTYPIC FEATURES OF *CRYPTOCOCCUS*  
*NEOFORMANS* AND CSF OPENING PRESSURE IN HIV –INFECTED PATIENTS  
WITH CRYPTOCOCCAL MENINGITIS IN MULAGO HOSPITAL  
KAMPALA - UGANDA**

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## ABSTRACT

**Background:** Cryptococcal meningoencephalitis(CM) is a highly prevalent HIV associated opportunistic infection in Africa, with mortality attributable to raised intracranial pressure (ICP) as high as 50%, rising to 100% among untreated patients. Fungal burden (positively correlated with CSF opening pressure) and the capsular phenotype are thought to play a role in the evolution of raised ICP. The relationship between CSF quantitative culture and Cryptococcus cell count as well as relationship between capsular size and intracranial pressure are yet to be done.

**Objectives:** To count CSF Cryptococcus cells and measure their capsular diameters at microscopy and correlate them with CSF CFU/ mL and CSF opening pressure(LP OP) respectively on days 1, 7 and 14 of CM treatment.

**Study design and setting:** A prospective study nested into the Cryptococcal Optimal ART Timing (COAT) Trial that was conducted at the Mulago national referral Hospital (Kampala Uganda) from September 2011 to May 2012; evaluated CSF samples from 134 adult HIV-infected, ART naïve patients with an index episode of cryptococcal meningitis.

**Methods:** Patients'clinical data and CSF opening pressure data was collected from the COAT trial records; then cryptococcal cells counted and their capsule sizes measured under a microscope and fungal burden determined by quantitative culture of CSF on SDA. Data was filled into excel sheet, log converted and exported to EpiInfo v 3.4.3(Centers for Disease control and Prevention USA) and Stata TM v 10.0(stata corp., USA)/ Graphpad prism(version) to perform linear regression.

**Results:** Positive correlation between CSF cryptococcal cell counts and CSF quantitative culture when  $\alpha = 0.05$ , day1 ( $p < 0.0001$ ), day7( $p < 0.0001$ ), day14( $p = 0.0003$ ). Positive correlation between cryptococcal capsular size and CSF opening pressure on day1 ( $p = 0.0135$ ), day14( $p = 0.0145$ ). Positive correlation between CSF fungal burden and CSF opening pressure( $p = 0.0393$ ).

**Conclusion;** phenotypic features of Cryptococcus neoformans (capsular size; Cryptococcus cell count or number) are independently necessary though not sufficient for pathogenesis of raised ICP and might predict the risk of development of raised ICP.