Cryptococcal meningitis in HIV (AIDS) patients: A Mini Review

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ABSTRACT

Meningitis is a major health problem causing inflammation of the protective membranes covering the brain and spinal cord, collectively known as the meninges. Meningitis is generally caused by *Meningococcus*, *Streptococcus pyogenes* bacterial species causing bacterial meningitis: BM), *Mycobacterium tuberculosis* (Tubercular meningitis: TBM), *Cryptococcus neoformans* (fungal meningitis: CM). In recent times the CM and TBM are two most common types of chronic infectious meningitis. In adults, HIV-associated Cryptococcal meningitis has been reported in many areas of the world having high HIV seroprevalence i.e. in Sub-Saharan Africa. Cryptococcal meningitis is the fourth most commonly recognized cause of life-threatening infection among AIDS patients. Despite availability of antiretroviral therapy, the rise in rate of infections due to HIV/AIDS, suppress the cell mediated immune system and subjects are predisposed for opportunistic infections. Additionally, In AIDS patients, it is characterized by lack of meningeal signs and diminished inflammatory response. Diagnosis of CM is generally based on the collection of CSF sample and/or blood samples. Initially the CSF samples are processed for 'gold standard' culture methods, microscopy and India ink preparation. Serologically, Latex agglutination test (LAT) is the most commonly used for detection of Cryptococcal capsular antigen. Enzyme immunoassay (EIA) is another serological tool for detection of capsular polysaccharide antigens of *C. neoformans* in CSF.

Keywords: Cryptococcal Meningitis, HIV-Associated

Introduction

Meningitis is a major health problem causing inflammation of the protective membranes covering the brain and spinal cord, collectively known as the meninges[1]. Meningitis is generally caused by *Meningococcus*, *Streptococcus pyogenes* bacterial species causing bacterial meningitis: BM), *Mycobacterium tuberculosis* (Tubercular meningitis: TBM), *Cryptococcus neoformans* (fungal meningitis: CM). In recent times the CM and TBM are two most common types of chronic infectious meningitis[2]. In adults, HIV-associated cryptococcal meningitis has been reported in many areas of the world having high HIV seroprevalence i.e. in Sub-Saharan Africa[3, 4]. Though once known to be rare, cryptococcosis has occurred at a high frequency in India in the past two decades[5, 6]. Furthermore, prevalence of HIV-associated CM is also found to be common in many parts of India including North-eastern and as well as in Southern India [7, 8]. Cryptococcal meningitis is the fourth most commonly recognized cause of life-threatening infection among AIDS patients[9]. Despite availability of antiretroviral therapy, the rise in rate of infections due to HIV/AIDS, suppress the cell mediated immune system and subjects are predisposed for opportunistic infections. Additionally, In AIDS patients, it is characterized by lack of meningeal signs and diminished inflammatory response[10].

Clinical picture compatible with a diagnosis of Cryptococcal meningitis includes evidence of fever/

headache/meningismus/altered mental status or any other neurological manifestation with either a cerebrospinal fluid (CSF) abnormal biochemistry and/or pleocytosis and with a cryptococcal antigen titer of $\geq 1:8$ and/or Positive India Ink preparation for capsulated yeast cells and/or a Positive CSF culture yielding *Cryptococcus neoformans*[11].

Diagnosis of CM is generally based on the collection of CSF sample and/or blood samples. Initially the CSF samples are processed for 'gold standard' culture methods, microscopy and India ink preparation. Serologically, Latex agglutination test (LAT) is the most commonly used for detection of Cryptococcal capsular antigen[12]. Enzyme immunoassay (EIA) is another serological tool for detection of capsular polysaccharide antigens of *C. neoformans* in CSF. This is a rapid test that provides visual and numeric result in less than an hour without pre-treatment of the specimen[13, 14].

Conclusion

Since there is limited literature available on Cryptococcal meningitis and its causative agent (*Cryptococcus neoformans*) therefore, further studies focusing on the significance based on diagnosis, pathogenesis related to the infection would be highly appreciated.

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