



Prevalence of Cryptococcal meningitis among HIV patients in a tertiary care hospital.

KEY WORDS

Cryptococcus, HIV, Meningitis

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ABSTRACT

Introduction: Cryptococcal meningitis remains as a common cause of infectious morbidity and mortality among HIV positive patients. The aim of this study is to know the prevalence of cryptococcal meningitis among HIV patients.

Materials and Methods: A total of 44 HIV seropositive patients with meningitis were selected. CSF samples were sent to investigations like India ink preparation, culture on sabouraud dextrose agar and results were analyzed. **Results:** Out of 44 HIV seropositive patients, 9 (20.4%) were confirmed as cryptococcal meningitis. Among 9 cryptococcal meningitis patients, 6 (66.6%) were females and 3 (33.3%) were males. 8 (88.8%) patients out of 9 patients of cryptococcal meningitis were in the age group of 21-40 years. **Conclusion:** Diagnosing Cryptococcal meningitis is simple and available in all tertiary care centers and also many hospitals. So appropriate diagnosis gives a chance to physician to start prompt and appropriate treatment, which indirectly aids in decreasing the mortality rate.

INTRODUCTION:

Cryptococcus neoformans is a encapsulated yeast, facultative intracellular opportunistic pathogen [1], ubiquitously present worldwide, usually found in the droppings of pigeons. Cryptococcal meningitis remains as a common cause of infectious morbidity and mortality among HIV positive patients.

Among various species, cryptococcus neoformans is the most common pathogen, well known etiological agent for meningitis and meningo-encephalitis among HIV patients, also infect organ transplant recipients & malignancy patients [2]. Whereas other species such as Cryptococcus laurentii and Cryptococcus albidus were also recognized as occasional cause of meningitis among immunosuppressed patients [3].

HIV patients are more prone to opportunistic infections because their weakened immune system. When the CD4 count falls below 200 cells/mm³ there is more chances of getting opportunistic infections. CDC has described the cryptococcosis as one of the AIDS defining conditions, usually disease appears when the CD4 count is between 100-50 cells/mm³. Cryptococcus can spread to other parts of the body from central nervous system if the CD4 count falls below 50 cells/mm³[4].

The study has undertaken here to create awareness among physicians, as cryptococcus is one of the main cause of central nervous system infections among HIV patients. The aim of this study is to know the prevalence of cryptococcal meningitis among HIV patients.

MATERIALS AND METHODS:

This study was a prospective random observational, done from february 2014 to June 2015 at Department of General Medicine, Rajiv Gandhi institute of medical sciences, Cuddapah. The study started after taking approval from institutional ethical committee. Consent has taken from all the patients.

A total of 44 HIV seropositive patients with features of meningitis were selected to do this study. Patient details including age, sex, socioeconomic status, chief complaints, clinical history, HIV status, CD4 count, relevant past history etc were noted. Complete systemic examination was done. Patient/ guardian was advised for CSF sample investigations.

After receiving the consent, CSF samples were collected from all the patients under aseptic precautions and sent to laboratory for investigations.

At microbiology laboratory, samples were processed immediately. Each sample was divided into three parts, First part of CSF was used for Gram stain, KOH mount, India ink preparation, second part was inoculated on two test tubes of sabourauds dextrose agar and incubated at 300C and 370C and third part was retained for other investigations.

On India ink preparation, cryptococcus positive samples was observed as round capsulated glistening yeast cells about 10 m. Colonies on SDA was observed as creamy pasty mucoid colonies. Smear from colony observed as capsulated yeast cells. Further biochemical reactions was also confirmed as cryptococcus species. All the details about each sample was entered into excel sheet and analyzed.

RESULTS:

Studied population has CD4 count between 28 - 264 cells/mm³. Most of the HIV seropositive meningitis patients were in the age group of 21-40 years, was 32 (72.7%) patients out of 40 patients followed by 10 (22.7%) out of 44 patients were in 41-50 years age group. Only one (2.2%) patient and two (4.5%) patients presented with meningitis in the age groups 0-20 years and above 50 years respectively (Table No.1).

Table No.1 Age and sex distribution among HIV seropositive patients with meningitis

Sex	Age in years					Total	Percentage
	0-20	21-30	31-40	41-50	>50		
Female	0	11	10	6	2	29	65.9%
Male	1	5	6	4	0	16	36.3%
Total	1	16	16	10	2	44	100%

Most of the patients presented with headache, vomiting, neck stiffness, fever. 63.6% HIV seropositive patients were presented with altered sensorium and 50% with features like mood changes, inability to tolerate light or noise, looks unwell (Table No.2).

Table No.2: Clinical manifestations of HIV seropositive patients in relation to meningitis

Clinical features	No. of patients (n=44)	Percentage
Fever	32	72.7%
Headache	39	88.6%
Vomiting	38	86.3%
Neck stiffness	35	79.5%
Altered sensorium	28	63.6%
Others	22	50%

Out of 44 HIV seropositive patients, 9 (20.4%) were confirmed as

cryptococcal meningitis and all were treated with intravenous amphotericin B treatment, respond well. Among 9 cryptococcal meningitis patients, 6 (66.6%) were females and 3 (33.3%) were males. 8 (88.8%) patients out of 9 patients of cryptococcal meningitis were in the age group of 21-40 years and one patients was above 50 years.

DISCUSSION:

Cryptococcal meningitis is most common cause of fungal meningitis among HIV patients and is usually rare in persons with good functioning immune system [5]. *Cryptococcus neoformans* spreads by inhalation of basidiospores, then remain dormant in hosts depending on immune system disseminates to central nervous system by utilizing host phagocytes [6], where it is responsible for meningitis and meningoencephalitis [7].

As per this study out of 44 HIV seropositive patients, 9 (20.4%) were confirmed as cryptococcal meningitis and all were treated with intravenous amphotericin B treatment, respond well. Percentage of cryptococcal meningitis among HIV positive patients were compared with various studies in table no.3

Table No.3 Various studies showing prevalence of cryptococcal meningitis among HIV patients.

Various studies	Place of study	Year of study	Percentage
Present study	Cuddapah, India	2014-2015 (1 year)	20.4%
Lungran et al [8]	Manipur, India	2011-2013 (1 year)	27%
Vasant B et al [9]	Mumbai, India	2006-2007 (1 & 1/2 year)	2.79%
Rajani sharma et al [10]	India	2014	30%
Manoharan G et al [11]	India	2001	34.8%
Thankur R et al [12]	India	2006	46%

Among 9 cryptococcal meningitis HIV seropositive patients, 6 (66.6%) were females and 3 (33.3%) were males in this study. Various studies reported in accordance with our study stating that females were more predominant when compared to males [12-14]. Lungran P et al [8] observed males were predominantly reported with cryptococcal meningitis. This difference may be due to different HIV prevalence in various places all over India.

8 (88.8%) patients out of 9 patients of cryptococcal meningitis were in the age group of 21-40 years and one patients was above 50 years. Lungran P et al [8] and Lakshmi V et al [13] also observed the 21-40 years as the most common age group presented with cryptococcal meningitis among HIV patients. Lungran P et al [8] reported 68.75% were in the age group of 21-40 years.

Most of the patients presented with headache, vomiting, neck stiffness about 75-90%, fever. 63.6% HIV seropositive patients were presented with altered sensorium and 50% with features like mood changes, inability to tolerate light or noise, looks unwell in the present study. Vasant B et al reported that 90-100% of clinical manifestations were related to cryptococcal meningitis.

CONCLUSION:

Every physician should be aware of the Cryptococcal meningitis prevalence which is increasing worldwide among HIV patients. Diagnosing Cryptococcal meningitis is available in all tertiary care centers and also many hospitals. So appropriate diagnosis gives a chance to physician to start prompt and appropriate treatment, which indirectly aids in decreasing the mortality rate.

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