



# CNS Cryptococcosis: Clinical Comparison of Immunocompetent Versus Immunocompromised Cases

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## Introduction

- Cryptococcal meningitis (CM) primarily affects immunocompromised individuals, with 152,000 yearly cases in HIV patients worldwide and 3400 yearly cases in the U.S.
- Up to 20% of cases occur in immunocompetent patients.
- 10-week mortality rates of 15-26% in patients with HIV and 90-day mortality of 27% in patients without HIV.
- There are limited clinical comparisons between immunocompromised and immunocompetent CM patients.

## Methods

- Single-centered retrospective chart review
- Patients greater than 18 years old admitted between 2012 and 2022 with *Cryptococcus neoformans* meningitis.
- Demographics, associated conditions, clinical data, clinical outcomes collected.
- Patients categorized into immunocompromised and immunocompetent groups.

## Results

	Immunocompromised N=32 (%)		Immunocompetent N=5 (%)	
<b>Age, median (IQR)</b>	59.5y	(47.3,68.3)	64.0y	(55.0,66.0)
<b>Sex, male</b>	25	(78.1)	2	(40.0)
<b>Race</b>				
<i>Black</i>	16	(51.6)	3	(50.0)
<i>Hispanic</i>	8	(25.0)	2	(40.0)
<i>White</i>	7	(22.6)	0	(0.0)
<b>Presenting Symptoms</b>				
<i>Headache</i>	24	(75.0)	4	(80.0)
<i>Encephalopathy</i>	16	(50.0)	4	(80.0)
<i>Fever</i>	13	(40.6)	2	(40.0)
<i>Vomiting</i>	11	(34.4)	1	(20.0)
<i>Photophobia</i>	6	(18.8)	0	(0.0)
<i>Dyspnea</i>	3	(9.38)	0	(0.0)
<b>Chronic Conditions</b>				
<i>Human Immunodeficiency Virus (CD4 &lt;500)</i>	19	(59.4)	0	(0.0)
<i>Solid Organ Transplant</i>	11	(34.4)	0	(0.0)
<i>Type 2 Diabetes Mellitus</i>	6	(18.8)	2	(40.0)
<i>Substance Use Disorder</i>	6	(18.8)	3	(60.0)
<i>Malignancy/Cancer</i>	3	(9.38)	1	(20.0)
<i>Homelessness</i>	2	(6.25)	1	(20.0)
<b>Time to first lumbar puncture, median (IQR)</b>	1.07d	(-0.43,2.84)	5.88d	(0.20,12.1)
<b>Lumbar puncture &lt;48h of arrival</b>	20	(64.5)	2	(40.0)
<b>Length of stay, median (IQR)</b>	18d	(9.25,27.8)	30d	(7.21, 31.3)
<b>ICU care</b>	7	(21.9)	2	(40.0)
<b>Patient directed discharge</b>	3	(9.38)	1	(20.0)
<b>Treatment</b>	31	(96.9)	5	(100)
<i>Amphotericin/flucytosine, fluconazole</i>	28	(87.5)	4	(80.0)
<i>Micafungin switched to amphotericin/flucytosine</i>	1	(3.13)	1	(20.0)
<i>Amphotericin only</i>	1	(3.13)	0	(0.0)
<i>Fluconazole only</i>	1	(3.13)	0	(0.0)
<b>Treatment Adverse Effects</b>	21	(65.6)	3	(60.0)
<i>AKI</i>	17	(53.1)	2	(40.0)
<i>Hypokalemia</i>	10	(31.3)	2	(40.0)
<i>Anemia</i>	3	(9.38)	0	(0.0)
<i>IRIS</i>	2	(6.25)	0	(0.0)
<b>Overall Death</b>	13	(40.6)	1	(20.0)
<i>Inpatient death/hospice</i>	4	(12.5)	1	(20.0)
<i>Death &lt;30 days</i>	0	(0.0)	0	(0.0)
<i>Death &gt;30 days</i>	9	(28.1)	0	(0.0)
<b>Recurrence of Infection</b>	5	(15.6)	0	(0.0)
<b>30d Readmission</b>	8	(25.0)	0	(0.0)
<b>Lost to follow up</b>	3	(9.38)	1	(20.0)
<b>Outpatient Infectious Disease follow up</b>	14	(43.8)	2	(40.0)

## Results

- 37 patients with CM identified.
- 32 (86.5%) immunocompromised patients and 5 (13.5%) immunocompetent patients.
- Median time to first lumbar puncture (LP) was 1.07 days (IQR -0.43, 2.84) in immunocompromised and 5.88 days (IQR 0.20, 12.1) in immunocompetent groups.
- ICU care required for 7 immunocompromised (21.9%) and 2 immunocompetent patients (40.0%).
- 8 readmissions (25.0%) within 30 days and 5 cases (15.6%) of recurrence in immunocompromised group. No readmission or recurrence among immunocompetent cases.
- 13 deaths (40.6%) in the immunocompromised group and 1 death (20.0%) in the immunocompetent group.

## Conclusions

Our results suggest a greater delay to first LP and higher severity of disease requiring ICU level of care in the immunocompetent group compared to the immunocompromised counterpart. However, long-term outcomes such as mortality, recurrence, and readmission were lower in the immunocompetent group.