Characteristics, treatment, and outcomes of cryptococcal infections among patients living with and without HIV

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Introduction and objective

- Cryptococcus is an opportunistic fungal pathogen that historically connected with HIV patients
- The emergence of ART has led to a decrease in mortality and to a decrease in mortality and morbidity people living with HIV (PLWH) but the opposite is true with non HIV patients.
- Non HIV patient population is very diverse, from transplant receiveng patients patient population is very diverse, from transplant receivers, to heart failure and cirrhotic patients, autoimmune patients and finally patients with a normal immune system.
- This study aims to compare the clinical characterics, treatment plans and outcomes of cryptococcal infections among HIV and non HIV patients.

Methods

Retrospective cohort study comparing hospitalized adults with positive Cryptococcal culture or antigen among HIV-uninfected individuals (cases) and PLWH (controls) from June 2013-August 2024 at Henry Ford Health System in Southeast Michigan. The primary outcome was all-cause mortality; secondary outcomes included 30-day relapse and readmission, adverse drug events, and 90-day mortality. Bivariate analyses were performed using the Wilcoxon rank-sum test for continuous variables and Chi-squared or Fisher's exact test for categorical variables.

Results

Table 1. Demographics and Clinical Characteristics of Patients

	Overall n=76 (%)	Non-HIV n=54 (%)	HIV n=22 (%)	p-value
Median Age, IQR	63, 50-69	66, 57-73	49, 40-58	**.0001**
Male sex	56 (73.7)	38 (70.4)	18 (81.8)	.3040
Race/Ethnicity				**.0001**
White	36 (47.4)	36 (66.7)	4 (18.2)	
Non-White	18 (52.6)	18 (33.3)	18 (81.8)	
Smoking status				**.0002**
Current	20 (26.3)	7 (13.0)	13 (59.1)	
Former	29 (38.2)	24 (44.4)	5 (22.7)	
Diabetes mellitus	25 (32.9)	25 (46.3)	0 (0.0)	NA
Cardiovascular disease	52 (68.4)	44 (81.5)	8 (36.4)	**.0001**
Chronic Obstructive Pulmonary Disease	17 (22.4)	13 (24.1)	4 (18.2)	.7637
Interstitial Lung Disease	6 (7.9)	6 (11.1)	0	NA
Chronic kidney disease	30 (40)	28 (51.9)	2 (9.1)	**.0005**
Dialysis	10 (13.2)	10 (18.5)	0	NA
Cirrhosis	15 (19.7)	13 (24.1)	2 (9.1)	.2060
Hematologic malignancy	8 (10.5)	7 (12.9)	1 (4.5)	NA
Solid Malignancy	10 (13.2)	9 (16.7)	1 (4.5)	NA
Rheumatoid arthritis	5 (6.6)	5 (9.3)	0	NA
Systemic Lupus Erythematosus	4 (5.26)	4 (7.4)	0	NA
Other autoimmune	13 (17.1)	12 (22.2)	1 (4.5)	NA
Sarcoid	3 (3.9)	3 (5.6)	0	NA
Solid Organ Transplant	11 (14.5)	11 (20.4)	0	NA
Bone Marrow Transplant	1 (1.3)	1 (1.9)	0	1
Systemic Steroid Use	14 (18.4)	14 (25.9)	0	NA
Cytotoxic Chemotherapy	9 (11.8)	8 (14.8)	1 (4.5)	NA
Median Comorbidity Score, IQR	7 5.5-8	6.5, 5-8	7, 6-9	.1073

Table 2. Treatment and Outcomes of Patients

	Overall n=76 (%)	Non-HIV n=54 (%)	HIV n=22 (%)	p-value
Antiretroviral Therapy Initiation	13 (17.1)	NA	13	NA
Temporary Drain	2 (2.6)	1(1.9)	1 (4.6)	NA
Permanent Shunt	4 (5.3)	3 (5.6)	1 (4.6)	NA
Adjuvant Corticosteroid	0	0	0	NA
Surgical Resection	1 (1.3)	1 (1.9)	0	NA
Induction Therapy	54 (71.1)	34 (63.0)	20 (90.9)	**.0148**
Duration, Median Days, IQR	13.5, 10-4	10, 0-14	14, 11-14	.0609
Consolidation Therapy	46 (60.5)	28 (51.9)	18 (81.8)	**0.0154**
Duration, Median Days, IQR	28, 0-56	4, 0-56	56, 14-56	**.0475**
Total Duration, Median Days, IQR	41, 0-70	29.5, 0-70	68, 28-70	**.0496**
Maintenance Therapy	41 (54.7)	25 (46.3)	16 (72.7)	.0429
Length of Stay, Median Days, IQR	17, 9-25	12.5, 5-22	21.5, 17-26	**.0038**
Adverse Drug Events				
Readmission	2 (2.6)	1 (1.9)	1 (4.6)	NA
Hepatotoxicity	1 (1.3)	1(1.9)	0	NA
Acute Kidney Injury	30 (39.5)	17 (31.5)	13 (59.1)	**.0255**
QT Prolongation	4 (5.3)	2 (3.7)	2 (9.1)	.5747
Electrolyte Abnormality	17 (22.4)	10 (18.5)	7 (31.8)	.2340
Relapse within 30 days	5 (6.9)	4 (7.4)	2 (9.1)	1.00
Infection Readmission within 30 days	10 (13.2)	7 (13.0)	3 (13.6)	1.00
30-day Mortality	22 (28.9)	20 (37.0)	2 (9.1)	**.0148**
90-day Mortality	30 (39.5)	25 (46.3)	5 (22.7)	.0566

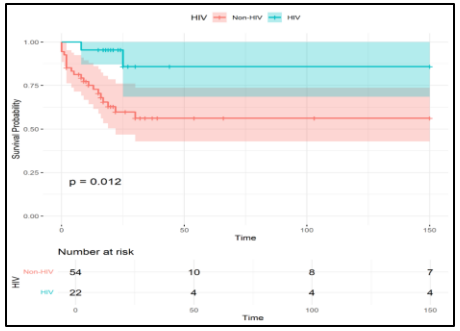

Figure 1: Kaplan-Meier Curves of HIV and Non-HIV groups within 30 days of Diagnosis

Conclusions

- HIV negative patients with cryptococcal disease were older
- HIV negative patients had more comorbidities
- HIV negative patients experienced higher short-term mortality (30 days) but not significant difference was noticed at 90 days
- HIV negative patients were diagnosed later
- Treatment was started later due to insidious clinical presentation
- Often diagnosis was established later in negative HIV patients

References

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