

Outcomes of Fungemia in Patients Receiving Extracorporeal Membrane Oxygenation

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DISCLOSURES

- None
- The view(s) expressed herein are those of the author(s) and do not reflect the official policy or position of Brooke Army Medical Center, the U.S. Air Force Medical Department, the U.S. Air Force Office of the Surgeon General, the Department of the Army, the Department of the Air Force and Department of Defense or the U.S. Government

INTRODUCTION

- Patients requiring extracorporeal membrane oxygenation (ECMO) are at increased risk for blood stream infections, with about 13% attributable to fungal infections and fungemia is associated with a > 30% mortality.
- There is currently limited published data on fungemia in ECMO patients.
- Best practices for ECMO circuit management and antifungals are unknown with management often extrapolated from LVADs or other chronic indwelling devices.
- Presented are our experience with twelve cases of fungemia in eleven patients.

METHODS

- A retrospective chart review was performed on all patients on ECMO with documented fungemia between March 2012 and December 2020 at Brooke Army Medical Center.
- Demographic parameters, organism, hospitalization days, ECMO days, treatment, metastatic focus, and outcomes were collected.

RESULTS

Characteristics of Patients	
Age years	32 (30-40)
Sex	82% M, 18% F
Day on ECMO Prior to Fungemia	14 (7-54)
Days in Hospital Prior to Fungemia	21 (20-69)
Days on Antifungal	17 (11-26)
Days to clearance of Fungemia	3 (2-4)
Number of Metastatic manifestations	4 (36%)
Outcomes	
Survived, completed treatment after decannulation	4 (36%)
Survived, completed treatment before decannulation	3 (27%)
Died during treatment	4 (36%)
Recurrence before decannulation	1/4 (25%)
Circuit changes ₁	6
Circuit reconfigurations ₂	2

Demographics and hospital data of 11 patients who developed Fungemia at Brooke Army Medical Center*

*Reported as medians (IQR) or n (%)

₁No circuit changes were for fungemia. Underwent circuit changes for hemolysis, thrombus burden, membrane efficiency, and increase in pressure through circuit.

₂One circuit reconfiguration for fungemia, one circuit reconfiguration for other bacteremia

RESULTS

Column1	Indication for ECMO	ECMO type	Organism	Days on ECMO prior to infection	Disseminated Infection	Therapy (duration, days)	Total Days of Antifungals	Treated after decannulation	Clinical Outcome
Patient 1	Burn	VV	Candida tropicalis	3	No	Posa+Ampho (3), Mica (10), Flu (6)	17	No	Decannulated and survived to discharge
Patient 2	Influenza	VV	Candida parapsilosis	63	No	Mica (4), Flu (10)	14	No	Decannulated and survived to discharge
Patient 3	Burn	VV	Candida albicans	5	Fungal Wound	Vori+Ampho (8), Mica (17)	24	Yes- 16 days	Decannulated and survived to discharge
Patient 4	Influenza	VV	Kodamaea ohmeri	0	No	Mica+Flu (2), Mica+Posa (10), Mica (10)	27	Yes- 16 days	Decannulated and survived to discharge
Patient 5	Chemotoxicity	VAV	Candida glabrata	51	No	Mica (1), Anid (11)	12	No	Patient died during hospitalization prior to completing treatment
Patient 6	Influenza	VV	Candida albicans	20	No	Mica (12), Flu (14)	26	Yes- 14 days	Decannulated and survived to discharge
Patient 7	Klebsiella Pneumonia	VV	Candida glabrata	73	N/A	Mica (4)	4	No	Patient died during hospitalization prior to completing treatment
Patient 8	Burn	VV	Candida tropicalis	11	Corneal	Mica (6), Isa+Ampho (3)	9	No	Patient died during hospitalization prior to completing treatment
Patient 9	COVID	VV	Candida dublinis	14	Fungal Emphyema	Mica (2)	2	No	Patient died during hospitalization prior to completing treatment
Patient 10	COVID	VV	Candida tropicalis	8	No	Mica (37)	37	Yes- 12 days	Decannulated and survived to discharge
Patient 11	COVID	VV	Candida albicans	41 *recurrence at ECMO day 88	Fungal Emphyema, Infected Thrombus	Mica (18) *then for recurrence Mica (31), Mica+Flu(12), Flu (12)	73	No	Patient transferred to OSH for bilateral lung transplant and decannulation

Summary of individual cases of patients with Fungemia.

*Posa = Posaconazole, Ampho = Amphotericin B, Mica = Micafungin, Flu = Fluconazole, Vori = Voriconazole
Anid = Anidulafungin, Isa = Isavuconazonium

RESULTS

- Most common isolates were *C. albicans* and *C. tropicalis*.
- Of the 7 patients who completed therapy, four (57%) were decannulated on therapy, and three (43%) remained on ECMO after treatment.
- One patient developed recurrence 29 days after completing a 14 day course of therapy.

CONCLUSIONS

- Fungemia generally appears late in the ECMO course and was associated with a 36% mortality.
- There were four cases of metastatic foci, of which one developed recurrence.
- All patients who were decannulated during therapy survived without recurrence.
- One patient had a circuit reconfiguration as part of therapy, but utility is unclear.
- Further larger studies are needed to determine ideal therapy, specifically length, for fungemia while on ECMO.

QUESTIONS

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THANK YOU

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