The Fungus Among Us

One Hospital System's Experience with *Candida Auris*

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Disclosures

None

Learning Objectives

1. Discuss screening results of *Candida auris* and real-world patients with active *Candida auris* infection requiring treatment.

Outline

Patient Cases

Patient Screening

C. Auris Sensitivities

Treatment of Patient Cases

Wrap-up

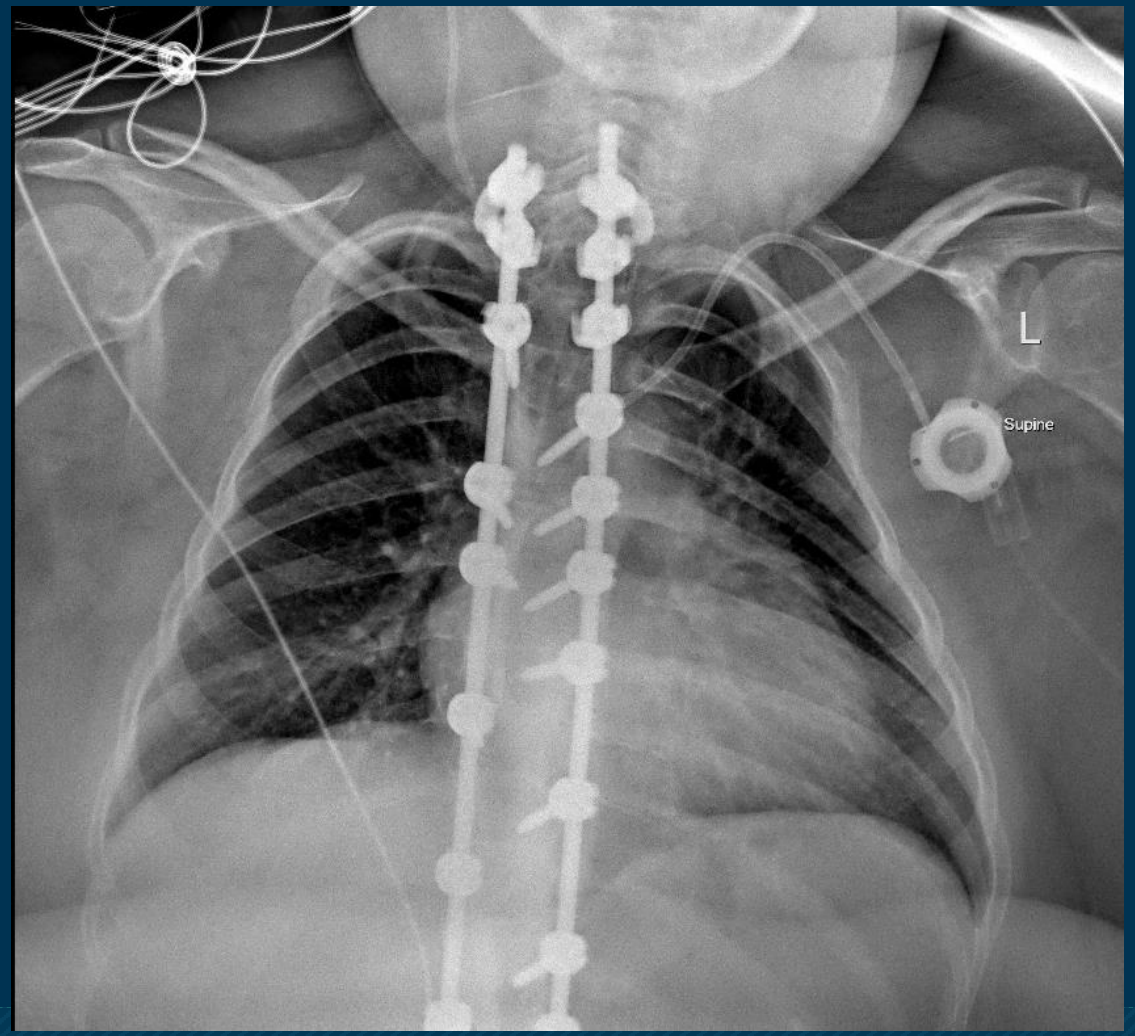
Patient Cases

Patient One: 33F

PMH

- Spina bifida
- Hydrocephalus with VP shunt
- Paraplegia
  - Neurogenic bladder with chronic indwelling catheter
  - Diverting colostomy
- Spinal fusion with retained orthopedic hardware
- MRSA abscess right-sided back/axilla
  - s/p I&D in 2023
  - Chronic doxycycline suppression
- Prior stage IV decubitus ulcers with exposed hardware
- Port-a-catheter secondary to UTIs with drug-resistant organisms

Patient One: 33F



Actual Patient radiographs from her chart

Patient One: 33F

- Transferred to our facility after presenting to outlying hospital
  - Long-term care facility noted temperature >101
- Blood cultures 2/2 positive for yeast

Patient One: 33F

- Initial blood cultures on admission to our hospital: negative
  - Two sets drawn on D#1
  - Two sets drawn on D#3
- A second set were drawn from her port: positive
  - Two sets drawn D#3 after finding out results from outlying hospital

Patient 2: 30M

PMH

- C6→7 fracture s/p MVA (04/2024) with resultant:
  - Quadriplegia
  - Tracheostomy
- Complicated by:
  - Retropharyngeal abscess
  - Paraspinal abscess
  - Recurrent aspiration pneumonia
  - Cervical/thoracic osteomyelitis with retained orthopedic hardware
  - Fungal mediastinitis/empyema/pericarditis
- Atrial fibrillation
- Esophageal perforation
- Autonomic insuffiency
- Prior microbiological growth:
  - *Candida auris*
  - *Candida paraspilosis*
  - *Aspergillus* species
- Chronic micafungin therapy for nearly one year via tunneled right IJ

Patient 2: 30M

- Admitted to hospital for another aspiration pneumonia
- Long-drawn out hospital course
- Two sets of blood cultures drawn around one month into hospitalization
  - One of two sets positive
  - Five sets prior (including one on admission) all negative
  - Remember: he's been on chronic micafungin therapy for about a year at this point

Patient 3: 48M

PMH

- Traumatic brain injury
- Seizure disorder
- Neurogenic bladder with suprapubic catheter
- Recurrent UTIs
- Left nephrectomy
- Stage IV sacral decubitus ulcer
  - Polymicrobial infection
- Aspiration pneumonia
- DM-2
- HLD
- HTN
- Prior microbiological growth:
  - MRSA
  - PSA
  - *B. fragilis*
  - *A. baumannii*
    - Carbapenem resistant
    - But TMP-SMX sensitive

Patient 3: 48M

- Lives with his sister and was admitted to the hospital when he became less responsive than normal with associated hypotension
- Urine culture positive
- CT A/P with IV contrast:
  - Stable to mildly increased size soft tissue collection near right lateral aspect of the suprapubic catheter measuring 1.9 x 2.0 cm

Patient Screening

Results of Patient Screening

Category	Unique Patients Screened	Positives	Percent Positive
Select	45	42	93.3
Pruitt	6	5	83.3
Uncategorized	34	27	79.4
Healthcare/Other Facilities	40	15	37.5
ASMP	478	25	5.2
Other Designations	65	3	4.6
Doctors	242	7	2.9
Other Correctional Facilities (except ASMP)	198	2	1.0
TOTAL	**1108**	**126**	**11.4**

May 2023 through Present

Susceptibility Testing

Susceptibility Testing

A total of 7 patients have had positive blood cultures

Limited results since transition to Epic
Excludes Cerner patients

One patient had positive urine culture

Blood cultures negative
Treatment provided given CT A/P findings

Blood Culture Results

Medication	P1	P2	P3	P4	P5	P6	P7
Fluconazole	>64	>64	>64	>64	>64	>64	>64
Itraconazole	0.5	0.25	0.25	0.12	0.25	0.25	NR
Voriconazole	>2	2	2	1	1	2	>2
Isavuconazole	0.5	0.25	0.25	0.06	0.12	0.12	0.25
Posaconazole	0.25	NR	0.06	0.03	0.12	0.12	0.25
Micafungin	0.12	0.12	0.12	0.06	0.12	0.12	0.12
Rezafungin	0.12	0.12	0.12	0.12	0.12	0.06	0.12
Anidulafungin	0.12	1	0.12	0.12	0.12	0.06	0.12
Amphotericin B	1	1	1	1	2	0.5	1

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Posaconazole	0.25	NR	0.06	0.03	0.12	0.12	0.25
Micafungin	0.12	0.12	0.12	0.06	0.12	0.12	0.12
Rezafungin	0.12	0.12	0.12	0.12	0.12	0.06	0.12
Anidulafungin	0.12	1	0.12	0.12	0.12	0.06	0.12
Amphotericin B	1	1	1	1	2	0.5	1

NR=not reported

Blood Culture Conclusions

- All uniformly resistant to fluconazole
- All but one uniformly susceptible to amphotericin B
- Micafungin: the MICs are consistent with ECV observed in isolates WITHOUT acquired resistance
  - Monitor patient's clinical response
- Triazoles: use fluconazole as a surrogate, but maybe some isolates will respond to another triazole agent
  - Physician discretion on case-by-case basis

ECV: epidemiological cutoff value

Source; Source; Source

What do we typically use?

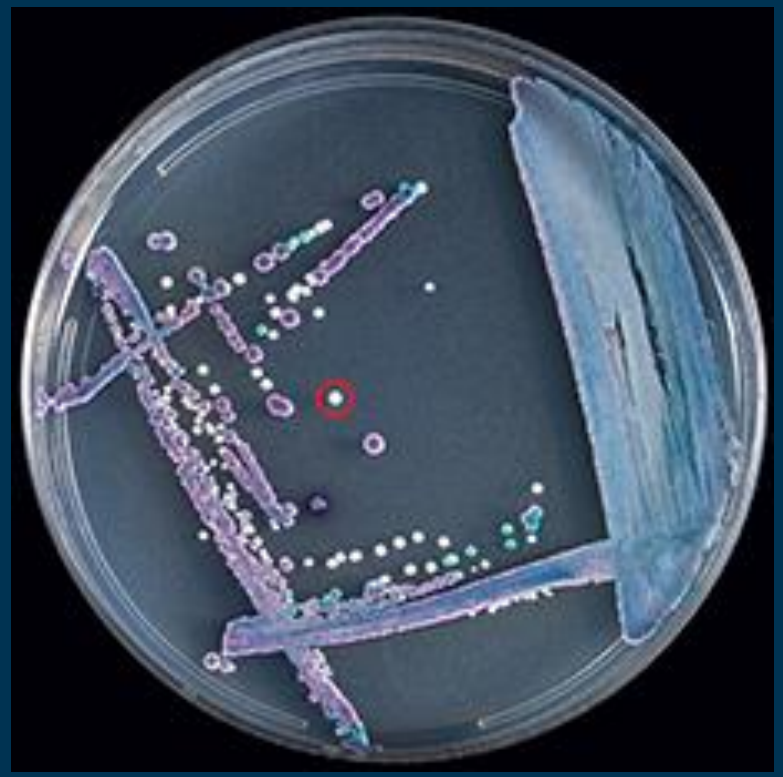
- Micafungin
- Isavuconazole: Once

https://www.cdc.gov/candida-auris/hcp/laboratories/identification-of-c-auris.html

Patient Cases

Treatment

Treatment



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Patient 1: Candidemia

- Two weeks micafungin

Patient 2: Candidemia

- While awaiting susceptibility testing: Ampho B and micafungin
- Micafungin sensitive so Ampho B discontinued
- Tentative plan: Rezafungin x 1→Isavuconazole
- PA denied so decision made to monitor off therapy

Patient 3: Candiduria

- Two weeks micafungin

PA: prior authorization

Bonus Patient

Candida auris case

- CC: SOB and weakness
- 57M with PMH of CHF secondary to ischemic cardiomyopathy
  - HTN
  - Hyperlipidemia
  - CKD stage III
  - Gout

  - LVAD placement ~ 30 months prior to admission

Clinical History

- After LVAD placement clinical course complicated with MSSA bacteremia treated with cefazolin
  - Placed on doxycycline orally as suppressive therapy
- Experienced right ventricular dysfunction
- LVAD failure due to fibrinous clots – required LVAD exchange about 1 month after initial LVAD placement

Exam and Labs on Admission

- On this admission:
  - Temp 102 F
  - RR 24/min

  - Lungs: bibasilar rales
  - CV with LVAD flow

  - CXR: CHF
  - CBC WBC 14,000 and Hgb 10 gm/dl
  - Initial blood culture: *C. auris*

Follow up

- Started on micafungin 100 mg daily
- PET-CT showed uptake surrounding the driveline site, outflow tract tubing.
- Cultures from driveline also showed *C. auris*
- After 2 weeks, blood cultures cleared and was DC home on micafungin 100mg daily
- Re-admitted 1 month later with *C. auris* fungemia...again. Started on micafungin 150mg daily.
- Discharged home on life-long micafungin daily

Outpatient follow up

After 4 months, had outpatient clinic doing well on micafungin 100mg daily and doxycycline 100mg daily

Patient inquired about alternative therapy and concern for line infection from prolonged PICC line

However, *C. auris* resistant to azoles.

ID team and patient decided to switch from micafungin to rezafungin 200mg weekly

DC PICC line and use weekly Hep locks

He is out now 6 months and stable with no recurrence on rezafungin and doxycycline

Not a transplant candidate thus will remain on rezafungin for life

In vitro susceptibility *C. auris*

Fluconazole	> 32 µg/ml	Resistant
Micafungin	0.125 µg/ml	Susceptible
Rezafungin	0.5 µg/ml	Susceptible

Assessment Question

A 72M with a PMH of multiple myeloma and a port-a-catheter presents to the emergency room with the chief complaint of malaise, decreased oral intake, and fatigue. Vitals show T101.2, HR 113, RR 16, and O_2 saturation of 98% on room air. Peripheral blood cultures are obtained, and he is admitted to the hospital. Gram stain shows yeast, and BCID results with *C. auris*. He is started on micafungin, and infectious diseases is consulted for further management.

BCID: Biofire Blood Culture Identification

Assessment Question

What do you recommend to the primary team regarding antimicrobial therapy?

A. Discontinue micafungin. Start amphotericin B.

B. Discontinue micafungin. Start fluconazole.

C. Continue micafungin.

D. Discontinue micafungin. Start Rezafungin.

Susceptibility testing on the isolate reveals the following information:

Fluconazole >64

Itraconazole 0.5

Voriconazole >2

Micafungin 0.12

Rezafungin 0.12

Amphotericin B 1

Assessment Question

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Rezafungin 0.12

Amphotericin B 1

Discussion

A. While amphotericin B is an option based on the MIC; it is an escalation of therapy. Unless the patient is not tolerating micafungin (which is also susceptible), or you are wanting to cover an invasive mold infection, there is not reason to escalate therapy currently.
B. Fluconazole is resistant based on the reported MIC.
C. Correct answer because there is no indication the patient is not tolerating the medication, there is no indication coverage needs to be broadened, and the MIC for micafungin shows it is susceptible.
D. While Rezafungin is susceptible based on testing, it likely wouldn't be utilized until the patient is being discharged.

Questions?