Impact of Rapid Diagnostic Technology on Patients with Candidemia

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Background

- Candidemia is the fourth most common cause of bloodstream infections (BSIs) with mortality rates ranging from 19-40%[1-5]
- Use of rapid diagnostic technology (RDT) for fungal organisms has demonstrated decreased time to antifungal therapy, but has inconsistently impacted clinical outcomes including mortality[1-6]
- At AdventHealth Central Florida Division South (CFD-S), pharmacists provide 24-hour coverage for real-time notification of all positive blood culture results using Genmark ePlex® Blood Culture Identification Panels (BCID)[7]

Objective

- To evaluate the clinical impacts of RDT paired with 24/7, pharmacist-driven response in patients with *Candida* bloodstream infection

Methods

- Multicenter, pre/post, retrospective chart review
  - Pre-RDT: June 2019-May 2020
  - Post-RDT: August 2020-July 2021

Inclusion	Exclusion
• Age ≥ 18 years • Positive blood culture with *Candida* spp. • Received ≥ 72 hours antifungal therapy	• Death or discharge prior to culture positivity • Receipt of systemic antifungal prophylaxis • Known candidiasis at time of first culture

Results

Characteristic	Pre-RDT (n=100)	Post-RDT (n=100)
Age (years), median (IQR)	59.5 (42.5-71.0)	61.5 (52.8-75.0)
Weight (kg), median (IQR)	76.15 (59.9-89.7)	73.5 (62.0-93.1)
Male, n	45	55
Past medical history, n		
Diabetes	25	31
IVDU	8	2
Solid organ transplant	2	2
Immunosuppression, n	21	15
Gastrointestinal perforation, n	2	4
Hospitalization within the previous 90 days, n	59	49
APACHEII Score, median (IQR)	13.5 (8-18.25)	16.5 (10-22)
Central venous catheter for ≥ 48 hours, n	69	67
Renal Replacement, n	24	31
CRRT	5	16
HD	19	15
Candida Score, median (IQR)	2 (0-2)	2 (1.75-2.25)
Severe sepsis + vasopressors, n	48	30
Receiving total parental nutrition, n	17	20
Abdominal Surgery in last 30 days, n	13	19
Candidemia within the past year, n	8	5
Systemic antibiotics in previous 30 days, n	65	71
1	33	20
2	20	21
3+	12	30

Outcome	Pre-RDT (n=100)	Post-RDT (n=100)	p-value
Time to effective antifungal (h), median (IQR)	39.8 (18.5-66.6)	38.5 (22.1-53.1)	0.217
Time to optimal therapy (h), median (IQR)	75.7 (39.8-122.6)	67.8 (40.9-113.5)	0.707
Time to culture clearance (h), median (IQR)	101.8 (73.4-144.3)	97.7 (70.0-160.0)	0.923
Duration of therapy (d), median (IQR)	12 (8-17)	13 (7-16)	0.950
Length of stay (d), median (IQR)	22 (14-35.3)	24 (16-40.3)	0.156
ICU length of stay (d), median (IQR)	2.5 (0-12.3)	6 (0-22.3)	0.033
In-hospital mortality, n	15	30	0.011
30-day readmission, n	30	21	0.144

Discussion

- No difference in time to effective antifungal therapy
  - Antifungal therapy often initiated at the time of gram stain report
  - High background use of empiric antifungals
- Increased ICU length of stay and in-hospital mortality in the post-RDT group are likely a reflection of higher baseline APACHE II scores

Conclusions

- RDT paired with 24/7, pharmacist driven response did not result a significant difference in time to effective antifungal therapy in patients with candidemia
- Further study regarding optimal use of RDT in fungal infections is warranted

References

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Disclosures
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All authors have nothing to disclose.

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