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Does a Negative Rapid Diagnostic Test for Detection of Candida Bloodstream Infection Lead to Less Antifungal Use?

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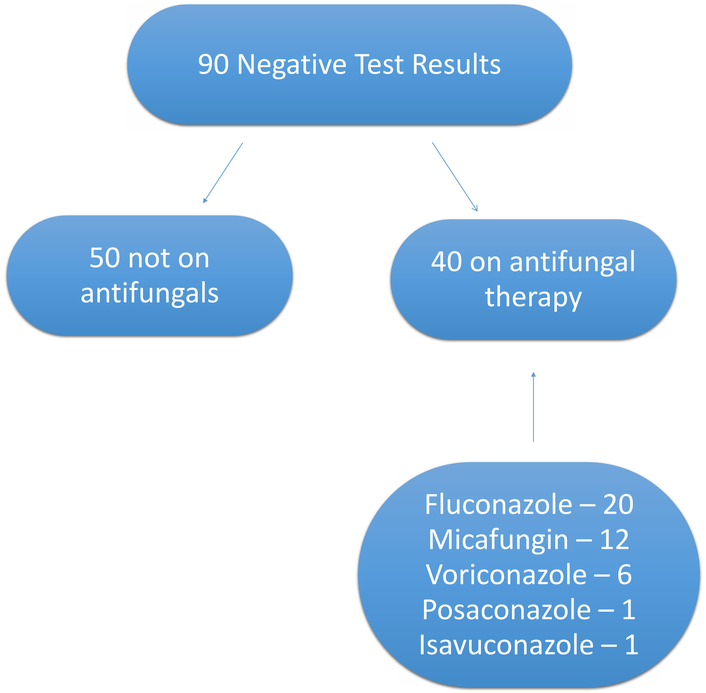
BACKGROUND

- Candida species are the fourth leading cause of nosocomial bloodstream infections in the United States
- Detection, identification and susceptibility testing using standard instrumented blood culture systems and routine microbiological techniques takes up to 4-10 days until results are available
- Empirical treatment with antifungal therapy prior to having any results often leads to unnecessary coverage for Candida infection for up to 10 days in those patients without infection
- The T2 Candida Panel is an FDA-approved assay that rapidly detects the presence of 5 Candida species directly from whole blood in 3-5 hours to identify Candida fungemia or invasive Candida infection
- In this study, we determined whether antifungal treatment decisions were altered based on negative results of a T2 assay

METHODS

- We conducted a retrospective chart review of all patients who had a T2 Candida assay at our institution from March 1, 2016 to March 1, 2017
- Only valid test results were used for analysis
- If a patient had multiple valid T2 assays, only the first result was used for analysis
- If a patient had a positive T2 assay and was treated, all subsequent negative assays were excluded from analysis
- The patients' medical records were reviewed for use & duration of antifungal therapy, results of blood cultures, treatment modification, underlying illness, risk factors for Candida infection, LOS, 14-day mortality from the time of the T2 assay



Risk Factors	Negative T2 Assay	Empiric Antifungals	No Empiric Antifungals
Surgical ICU patients	36	17	19
Candida score >3	44	19	25

Candida score 5-point scoring system which determines the likelihood of invasive candidiasis vs colonization in non-neutropenic critically ill patients; score of >3 suggests cohort who would benefit from early antifungal treatment

RESULTS

- There were a total of 98 valid T2 Candida PCR test results from 3/1/2016-3/1/2017; 8 of these results were positive and therefore excluded from analysis
- Of the 90 negative results, 50 patients were not on empirical antifungal therapy at the time of the test; 40 patients were on empirical antifungals
- Of the 40 who received empiric therapy, it was stopped in 10 (25%) following T2 results
- The median time to stop empiric therapy was 3 days (range 1-23 days)
- The reasons for continuing antifungal therapy in the cases of negative T2 assays included hematologic malignancy patients on long-term prophylaxis (12), empiric use in cases of severe sepsis (5), positive culture results despite negative T2 assay in 5 patients: 1 patient with *C. lusitaniae* in blood culture, 1 patient with *C. parapsilosis* from positive culture of medical device, 1 patient with negative T2 but positive blood cultures from 2 days prior for *C. albicans* (was on antifungal therapy at time of test), 1 patient with *C. guilliermondii* in blood culture

CONCLUSIONS

- The result of a negative T2 assay led to cessation of antifungal therapy in some patients but many continued on empirical antifungals
- The majority of the patients in our analysis were evaluated in the surgical ICU where empirical antifungal use is most common, especially in the setting of GI surgery, septic shock, etc. Our results show that empirical antifungals were held in 19/36 (52%) of patients who had a negative T2 assay, suggesting that without the T2 assay there may be over-use of empirical antifungals
- Estimated annual cost savings based on 10-14 day course of empiric echinocandin @ $70/day and subtracting the test cost @ $220/test is $5,380-$10,700
- Our results suggest that a negative T2 Candida assay can affect empirical use of antifungal therapy in certain patient populations and may be useful in controlling the overuse of antifungal agents

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