



Impact Of An Antimicrobial Care Bundle Application On Management Of Candidemia In A Hospital Of Northern Italy



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Introduction

- In healthcare contexts several experiences have shown that the introduction of assisted prescription of antimicrobial therapy significantly impacts on outcome of infections, control of antimicrobial resistance and costs (1-2).
- Our object was to evaluate the effectiveness of a care bundle by an antimicrobial team (AT) to increase the compliance with International Guidelines related to the management of patients with candidemia in a hospital in Northern Italy.

Materials and Methods

- Single-center study, conducted from January 2010 to December 2012, at Spedali Civili general hospital of Brescia, an 1800-bed hospital, level 3 trauma center
- Inclusion criteria: All patients ≥ 18 years-old with one or more positive blood cultures for *Candida* species during the study period were enrolled
- The care bundle was developed by an AT of the Department of Infectious and Tropical Diseases, incorporating recommendations from International Guidelines for management of Candidemia
- Bundle elements: utilization of appropriate antifungal agents with appropriate duration of use, removal of intravenous catheters, repeat blood cultures within 48-72 hours and performance of ophthalmologic examinations and echocardiography assessment
- The patients who received the candidemia care bundle were compared with those who did not.
- Data were evaluated using the χ^2 test for categorical data and *t* tests for continuous data.
- Successful compliance with the individual elements of the candidemia care bundle was analyzed using the Fisher exact test. A *p* value of 0.05 or less was considered statistically significant.

References

1. Dellit TH, Owens RC, McGowan JE, et al., for the Infectious Diseases Society of America, and the Society for Healthcare Epidemiology of America.. *Clin Infect Dis* 2007;44:159–77.
2. Martin CA, Armitstead JA, Mynatt RP, Hoven AD. Moving antimicrobial stewardship from restriction to facilitation. *Am J Health Syst Pharm* 2011;68:109–10

Results

- Fifty patients with candidemia were evaluated: 13 (36%) received the candidemia care bundle (AT group) and 37 did not (control group)
- Demographic characteristics, hospital departments, the distribution of risk factors for candidemia and microbiological data in the two groups did not differ significantly from each other
- Approximately half of the patients in both groups were patients in internal medicine area.
- The major risk factors for development of candidemia were the use of antibiotic therapy and the presence of a CVC in place
- *Candida* sp. Isolated were: 33 (66%) *C. albicans*, 5 (10%) *C. glabrata*, 8 (16%) *C. parapsilosis*, 2 (4%) for *C. tropicalis*, 2 (4%) other *Candida* species
- Compliance with all candidemia care bundle elements was significantly higher in the AT group versus the control group (62.5% vs. 13.5%, $p=0.05$) and a compliance lower than 80% occurred in 5.8% vs. 56.7% respectively ($p=0.002$).
- Implementation of the care bundle significantly improved rates of ophthalmologic examination (84.6% vs. 35.1%, $p=0.02$), echocardiography assessment (92.3% vs. 59.4%, $p=0.02$), selection of an appropriate duration of therapy (100% vs. 48.1%, $p=0.006$) and removal of intravenous catheters (100% vs. 66.6%, $p=0.04$).
- The treatment success rates were higher in the AT group vs. the control group (85% vs. 65%), but not significantly.
- The average length of hospitalization (40.3 ± 17.2 days), the mean time until clearance of candidemia (13.5 ± 7.8 days) and the average period for the patients to become afebrile (8.5 ± 4.7 days) were similar in the AT group versus the control group.

Conclusions

The application of a candidemia care bundle directed by our AT improved the management of patients with candidemia, particularly with regard to the diagnosis, removal of intravenous catheters and performance of ophthalmologic examinations and echocardiography assessment. We encourage further exploration into the use of care bundles by ATs as part of their multifaceted approach to promoting appropriate antimicrobial utilization and optimizing the management of patients with infectious diseases.