

Candidaemia at The Prince Charles Hospital: A Retrospective Audit

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Introduction:

The Prince Charles Hospital (TPCH) is the main referral hospital for cardiothoracic surgery in the state of Queensland, Australia (population 5 million). A prior candidaemia audit presented in 2017 produced results contradictory to that in literature. A larger audit was performed to confirm whether the previously identified trends were continuing, and to ascertain whether an algorithm could be developed to risk-stratify for invasive disease or poorer prognosis, particularly with respect to IE.

Methods:

We performed a retrospective audit of patients identified in our laboratory information system who had *Candida* spp. in blood cultures from TPCH; between the years of 1999 and 2017. Clinical, laboratory and echocardiographic data was collated and analysed.

Results:

- There were 144 patients who were identified as having candidaemia. The top 4 species involved, were *C. albicans*, *C. parapsilosis*, *C. glabrata* and *C. dubliniensis*.
- One year candidaemia mortality rate was 24%. Preliminary data is suggestive of renal replacement therapy as being the only significant mortality risk factor.
- There were 8 patients identified as having definite candidal IE (CIE). Of these, *C. parapsilosis* accounted for the majority. Four CIE cases involved native valves and four involved prosthetic valves. There were 4 CIE cases of tricuspid valve involvement, followed by aortic (2), mitral (1) and one patient with poly-valvular involvement (aortic and mitral).
- Our IE mortality rates (37.5%) followed that of literature of 30-60%¹. All of our right-sided IE (RSIE) patients survived. Half of our RSIE's received medical and half received surgical intervention. All prosthetic left-sided IE's (LSIE) died and 3 of 4 native LSIE's died, with the only survivor being 1 of 2, who received surgery.
- None of the CIE's had normal TTE's. Only 64% received echocardiograms (54% received TOE's). Only 55% of fatal cases received echocardiograms (63% of these had TOE's).
- *C. albicans* comprised 39% of candidaemias, but 12-17% of IE's. *C. parapsilosis* accounted for 29% of candidaemias, but 33-37% of IE. *C. glabrata* comprised 22% of candidaemias, but 17-25% of IE. *C. parapsilosis* accounted for 6% of candidaemias, but 25-33% of IE.
- IV drug users (IVDU) accounted for 13% of our candidaemias. IVDU's comprised half to two thirds of our CIE's. 20% of IVDU candidaemias were CIE's.
- Duration of fungaemia does not appear to be related to organism.

Discussion:

- Our candidemia mortality rates (24%) appear lower than in literature, likely reflecting a unique patient demographic, with fewer Haematology and Oncology patients. IVDU's and *C. dubliniensis* are over-represented in our data set.
- Our current data shows that LSIE predicts poor prognosis, particularly if there is prosthetic involvement. RSIE's have better prognosis, even if managed without surgery.
- IE rates in candidaemia in a cardiothoracic hospital are surprisingly low (4.5-5.0%). Our current data suggests that the role of echocardiograms in all candidaemias are unclear.
- Limitations are that our results are preliminary and data collection is still ongoing at present.
- Candidaemia has significant morbidity and mortality. Outcomes may be improved with larger data-sets to guide management algorithms.

Figure 1: Distribution of candidaemia by species.

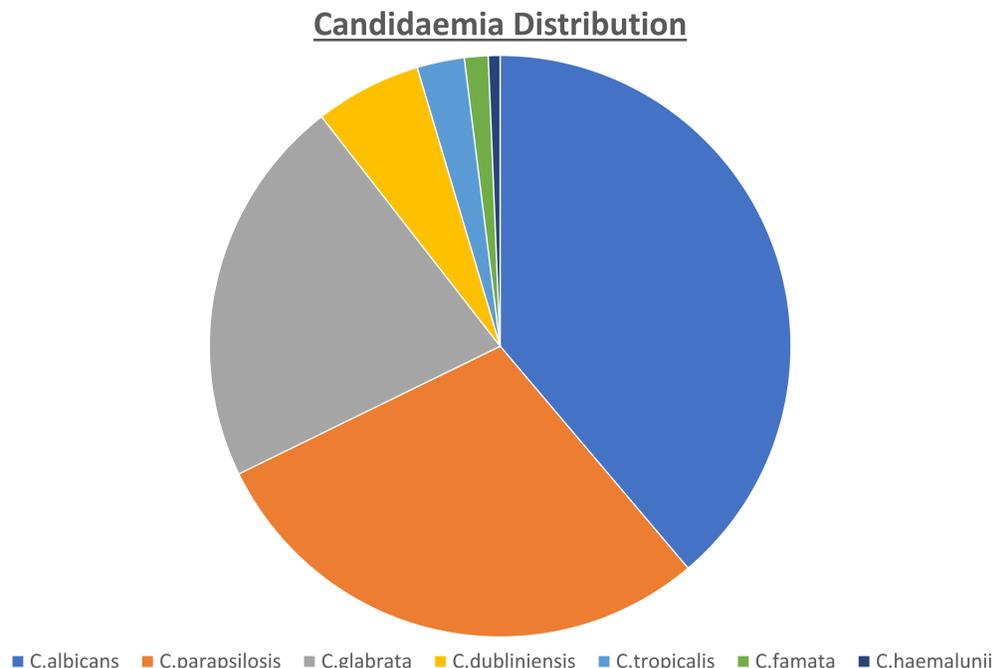


Figure 2: Duration of Candidaemia by Species

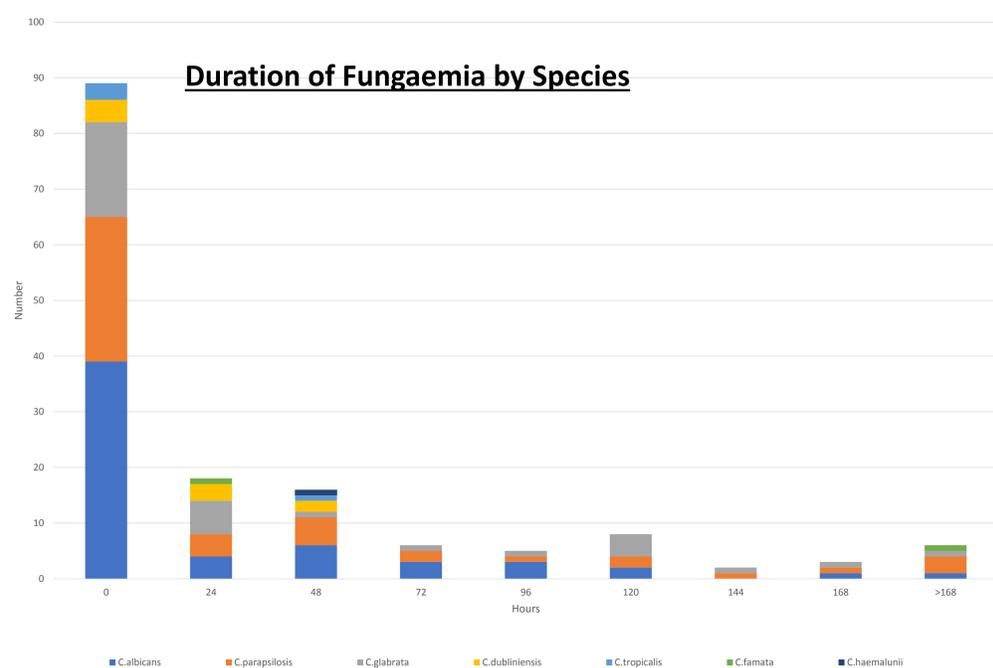
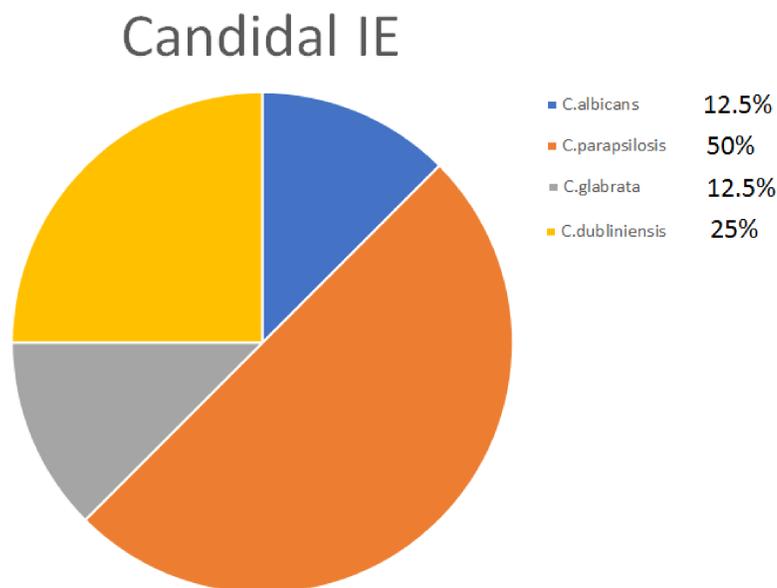


Figure 3: Distribution of Candidal IE by species



References:

- 1. Hirano R, et al. Retrospective analysis of mortality and *Candida* isolates of 75 patients with candidemia: A single hospital experience. *Infect. Drug Resist.* 2015; 8: 199-205.