infective endocarditis Queensland

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Candidaemia at The Prince Charles Hospital: A Retrospective Audit

Jonathan Szeto[1,2,3], Sean Goh[1,3,4], Chaw Aye[1], Karen Hay[3,5], Kim Phuong Tran[1], Daniel Yew[1], Ruth Yi Fei Heng[1], Alison Huynh[1], Timothy Chalk[1], Christina Mew[1], Robert Horvath [1,3,6].

1. Internal Medicine Services, The Prince Charles Hospital, Brisbane, Queensland, Australia.
2. School of Medicine, Griffith University, Queensland, Australia.
3. Faculty of Medicine, The University of Queensland, Australia.
4. Department of Cardiothoracic Surgery, The Prince Charles Hospital, Brisbane, Queensland, Australia.
5. QIMR Berghofer Medical Research Institute, Brisbane, Queensland, Australia
6. Pathology Queensland, Brisbane, Australia.

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.papsilosis* accounted for 29% of candidaemias, but 33-37% of IE. *C.glabrata* comprised 22% of candidaemias, but 17-25% of IE. *C.papsilosis* 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.

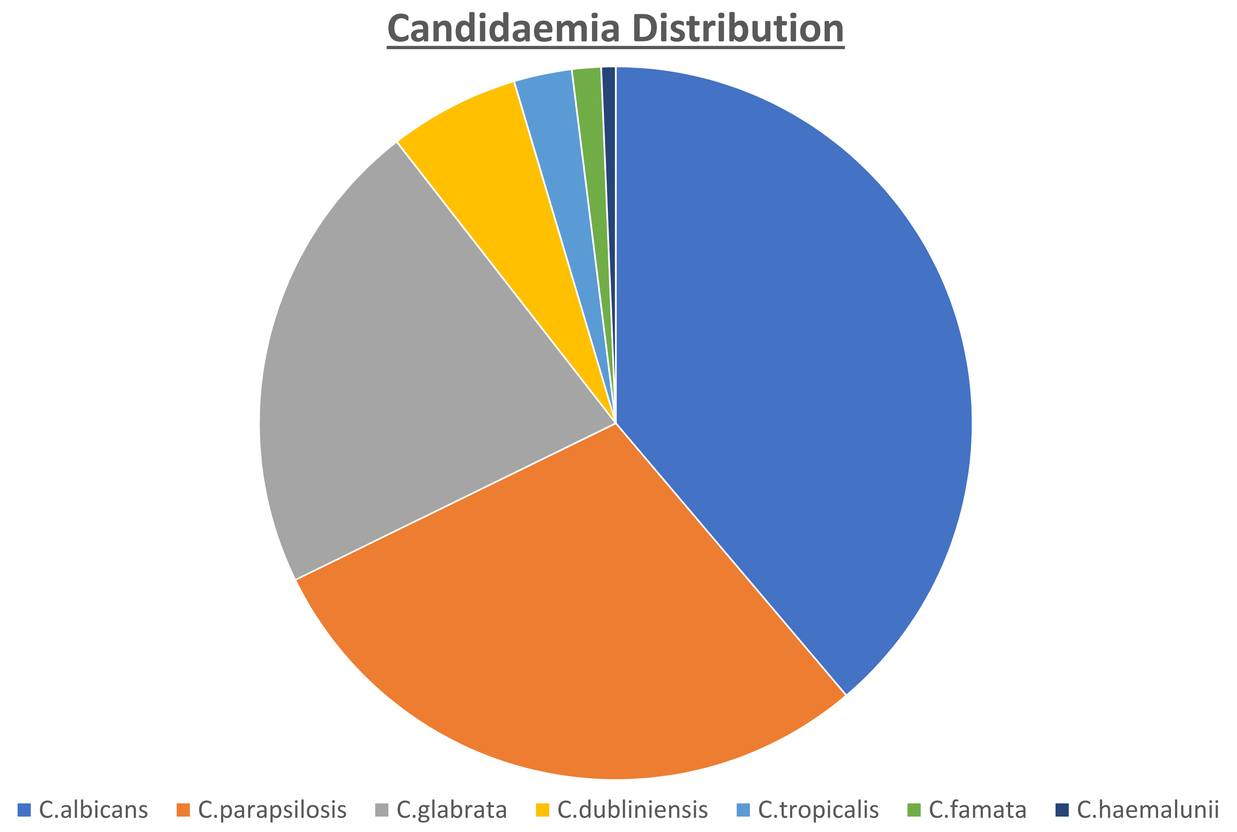


Figure 2: Duration of Candidaemia by Species

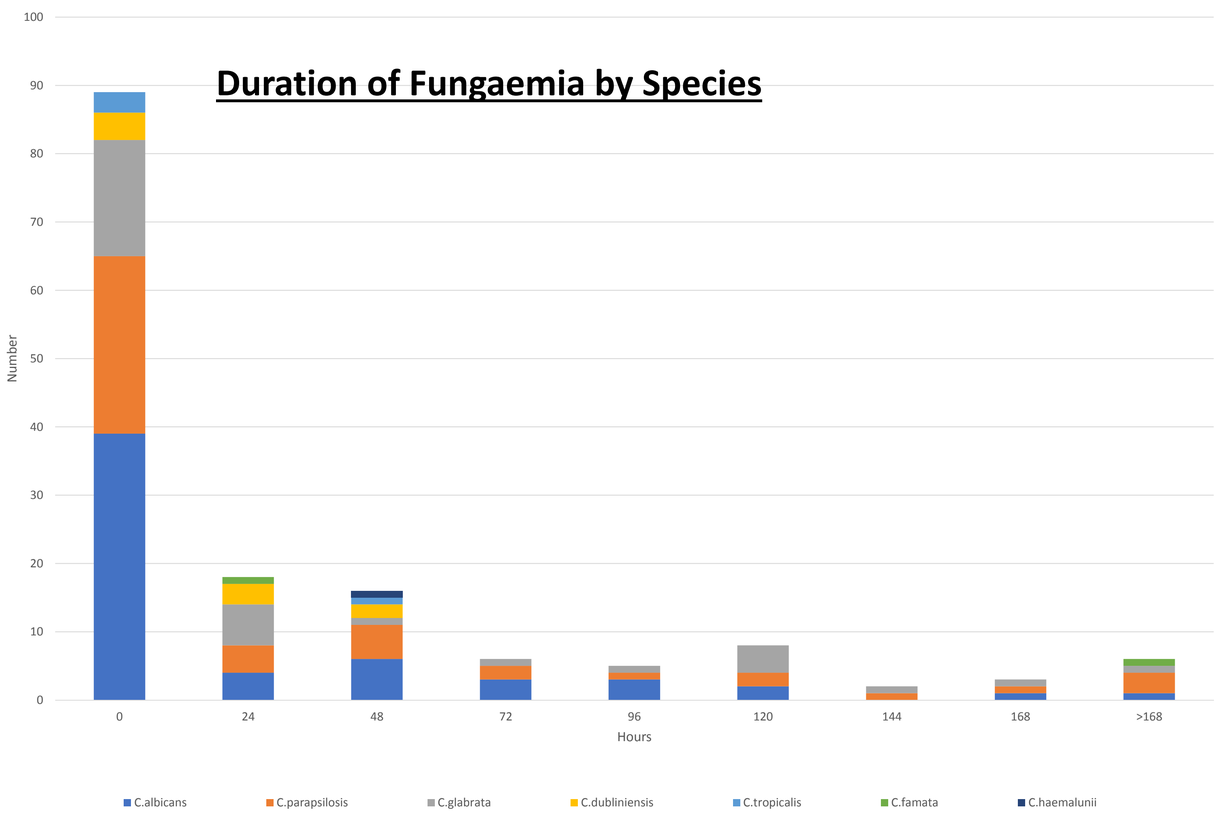
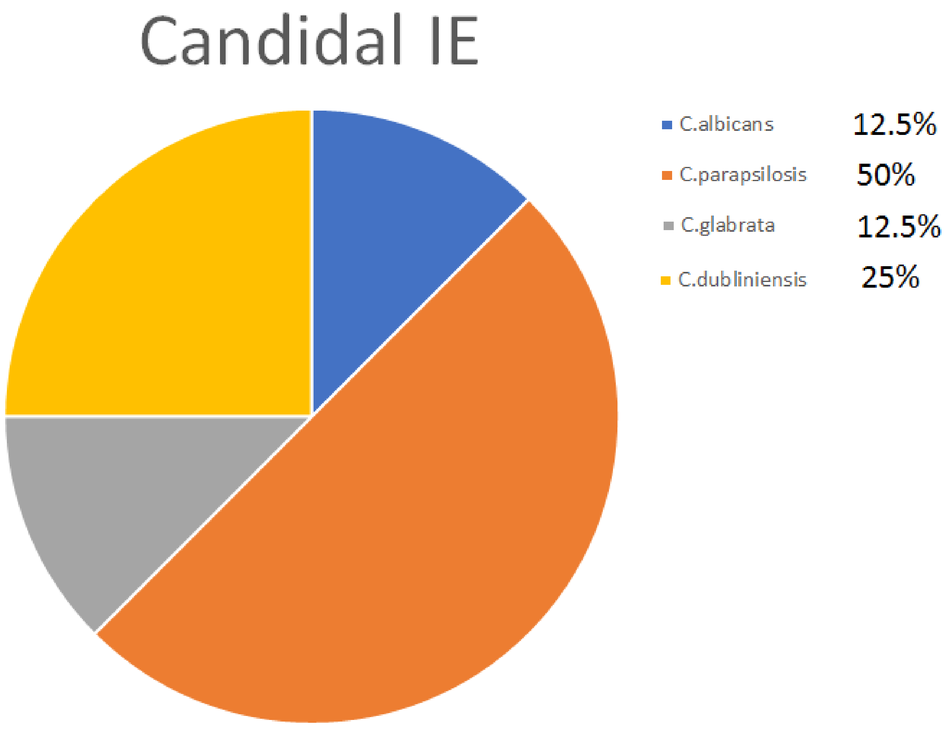


Figure3: Distribution of Candidal IE by species



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.*