A Multidisciplinary review of patients with Candida Endocarditis: Echocardiography and Outcomes

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Introduction:
Candida infective endocarditis (CIE) accounts for approximately 1-2% of all cases of infective endocarditis. This infection is classically thought to involve large vegetations and associated with a high mortality rate between 30-80%. Series concentrating on imaging with relation to outcome are sparse.

Methods:
A retrospective audit of our microbiological laboratory information system at The Prince Charles Hospital (Queensland, Australia) between 1999 and 2017 identified 120 patients being positive with Candidaemia.

Results:
Eight of these patients had confirmed valvular CIE on echocardiography, 4 suspected CIE were not confirmed on serial investigations, and 5 additional patients were identified with non-valve cardiac disease related CIE.

Five (5) male and three (3) female patients, mean age of 46.6 (SD: 23.3, range: 17-87), had an average Charlson co-morbidity index of 1.25 (range: 0-4) on admission. A history of intra-venous drug use (IVDU) and long-term venous catheter use occurred in 50% of patients. Six (6) patients had previous cardiac surgery, five (5) having previous valve surgery and one (1) cardiac transplant. Three (3) intra-venous drug users required further valve surgery.

Two (2) patients had a pre-operative embolic event, whilst three (3) had fevers. Candidaemia was identified following initial blood cultures with a minimum doubling time of 7.25 days (range: 3-16). Microbiology identified Candida sub species in all 8 patients (Figure 1).

Echocardiography was performed in all patients (TTE, n=6; TOE, n=4; TTE and TOE, n=2). Transthoracic echocardiography confirmed right-sided endocarditis in three (3) of four (4) patients. One patient required subsequent TOE for confirmation following equivocal results on TTE. The most common valve affected was the tricuspid valve (Figure 2). Valvular vegetations were seen in six (6) patients (range: 9-16mm) with valve regurgitation in six (6) patients (Figure 3 & 4).

Following confirmation of CIE, all patients were treated with appropriate anti-fungals (Amphotericin B, n=4; Caspofungin, n=3; Fluconazole, n=2; Voriconazole, n=1) for an average duration of 28 days (SD: 19.1, range: 10-63). Four (4) patients underwent surgery (Figure 5 & 6).

There were a total of 3 deaths within 90 days (at 19, 24, and 76 days). One patient died peri-operatively and two who were denied surgery. The first was non-compliant with ongoing IVDU. The second was due to the nature and extent of valve destruction.

Discussion:
Our study found a low incidence of confirmed Candida IE in patients with Candidaemia (6.67%). Echocardiography played an important role in the assessment and management of patients with suspected CIE, with one patient required subsequent TOE following equivocal TTE results. All patients with confirmed CIE received anti-fungal therapy of an appropriate duration based on current established guidelines.

Conclusion:
Candida infective endocarditis is rare in patients with Candidaemia but associated with a high mortality rate. Echocardiography plays an important role in the diagnosis and management of these patients. Management with anti-fungal therapy remains important, with some patients requiring surgery.

References: