Infected Endocarditis in Indigenous Australian patients: Experience at a Single Cardiothoracic Centre

Sean Goh1,2, Susan Smith1, Kayla Tran2, David Godbolt2, Aaron Lin2, Su Hlaing2,3, Gregory Scala2,3, Robert Horvath2,4,5, Peter Pohiner1.

1. Department of Cardiothoracic Surgery, The Prince Charles Hospital, Brisbane, Queensland, Australia.
2. Pathology Queensland, Brisbane, Australia.
3. Department of Cardiology, The Prince Charles Hospital, Brisbane, Australia.
4. Internal Medicine Services, The Prince Charles Hospital, Queensland, Australia.
5. Faculty of Medicine, The University of Queensland, Australia.

Introduction: Infective endocarditis (IE) has significant morbidity and mortality. In the Indigenous Australian population, IE is associated with complex valvular pathologies.

Methods: A retrospective audit of Indigenous Australian patients who had cardiac procedures performed at The Prince Charles Hospital (Brisbane, Australia) between 2005 and 2017 was performed.

Results: One hundred and seventy-five (175) Indigenous Australian patients required cardiac interventions, of which twenty (20) were identified with IE.

Demographics
The mean patient age was 46.8 (SD: 10.7, range: 35-74) and 62% were male. The average Charlson co-morbidity index on admission was 1.65 (range: 0-6). Fevers and a new murmur were identified in 45% and 55% of patients on admission, respectively. Six (6) patients presented with a pre-operative embolic phenomenon (CVA, n=6; pulmonary, n=2), of which one (1) had both a pulmonary and a cerebral emboli. Eight (8) patients had a history of intra-venous drug use (IVDU) and two (2) were dialysis-dependent. There were eight (8) patients who had previous cardiac surgery, of which one (1) was performed for tetralogy of Fallot. Four (4) patients had a cardiac device.

Investigations
Inflammatory markers were, on average, elevated at the time of first positive blood culture (WCC: 11.1, range: 5-23.5; CRP: 110.3, range: 3.5-399; pro-calcitonin: 10.0, range: 0.1-18). The most common organism identified was Staphylococcus aureus (40%) and 25% of patients had culture-negative IE (Figure 1). There were no HACEK organisms identified in this patient group.

Echocardiography was performed in all patients (TTE, n=17; TOE, n=13; TTE and TOE, n=10) with left-sided IE being the most common (15%). Native valve endocarditis was present in twelve (12) patients, with the aortic valve being the most commonly affected valve (45%, Figure 2). Eight (8) patients had a previous prosthetic valve procedure. One (1) had a pulmonary and tricuspid homograft, two (2) had aortic homografts, and one (1) had a tricuspid valve repair. One (1) patient had a PPM device infection. Vegetations were identified in 80% of patients (size: 3-35mm), of which 10% had abscess formation (Figures 3 to 6).

Management & outcomes
All patients received appropriate anti-bacterial therapy specific to their microbiology (penicillins, n=13; cephalosporins, n=13; other, n=11) with an average duration of 28 days (SD: 16, range: 3-57). All patients underwent surgery for IE with an average time to surgery of 13.1 days (SD: 10.8, range: 2-37) from the index admission. Heart failure was the most common indication for surgery (9), followed by embolic phenomenon (6) and uncontrolled infection (5). Fourteen (14) had single valve intervention (bioprosthetic, n=6; mechanical, n=6; homograft, n=2). Four (4) required surgical intervention on multiple valves. An additional two (2) had concomitant procedures (CABG AVR MV repair or repair, CABG AVR MVR). There was no single valve repairs performed in this group.

Actuarial survival among patients was 95% ± 5% at 30 days, 79% ± 9% at 1 year and 73% ± 11% at 3 years.

Discussion:
The incidence of IE in our cohort was 14.4%. Left-sided endocarditis was more common (n=15) with only 67% of these patients receiving pre-operative transoesophageal echocardiography. All patients undergoing single valve intervention had valve replacements. Patients requiring multiple valve interventions and concomitant procedures were not uncommon in this group.

Conclusion:
Infective endocarditis in Indigenous Australian patients undergoing cardiac surgery is not uncommon and may involve multiple valves. There is often a delay in timely diagnosis impacting on optimal management and safety. Management of IE is performed through a multidisciplinary team, which we recommend.

References: