

Cardiac Surgery in Indigenous Australians: Early Onset Cardiac Disease with follow-up Challenges[☆]



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Objective

To review the risk factors, complications and follow-up of Indigenous patients post cardiac surgery.

Methods

This was a retrospective study of Indigenous patients who underwent cardiac surgery at an Australian tertiary hospital between 2002 and 2009. Patients' medical notes were reviewed and data collected and analysed.

Results

There were 220 Indigenous patients who had cardiac surgery. Non-elective surgery was performed in 45.0% (99/220). A history of smoking was reported by 76.8% (169/220). The most common operation was coronary artery bypass grafting with a mean age of 55 years. Of the 71 valve operations, 31.0% had rheumatic heart disease. Mechanical valves were given to 56.3% (40/71) of patients with a mean age of 45 years. The rate of peri-operative bleeding requiring blood transfusion or reoperation was 8.6% (19/220) and 28-day mortality was 0.45% (1/220). Of the patients with mechanical valves, 10.0% (4/40) did not present for outpatient review. Late anticoagulation related complications were haemorrhagic stroke 7.5% (3/40) and ischaemic bowel 2.5% (1/40). Late mortality was 9.5% (21/220). Late anticoagulation related deaths were in 1.8% (4/220), of whom 0.9% (2/220) had mechanical valves.

Conclusions

The mean age of 52 years at which Indigenous patients have cardiac surgery is significantly low compared to non-Indigenous patients. Indigenous patients have multiple risk factors for cardiac disease and with a large number requiring emergency surgery. Although surgical outcome in the short term is favourable, a large number of patients are lost to follow-up. The use of mechanical valve and warfarin should be individualised. Strategic post-operative follow-up mechanisms are needed to address these issues.

Keywords

Indigenous • Aboriginal • Cardiac surgery • Follow-up

Introduction

Cardiovascular disease is the leading cause of death among Indigenous Australians, with a death rate approximately three-fold that of non-Indigenous Australians [1]. The high

prevalence of diabetes, endemic in the Aboriginal Australian and Torres Strait Islander populations further increases the risk of cardiovascular disease, with concomitantly poorer outcomes [2]. Despite having a higher burden of cardiovascular disease, the adjusted rates for undertaking any

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coronary procedure (percutaneous angioplasty or coronary artery bypass surgery (CABG)), are 22% lower in Indigenous than non-Indigenous patients [3].

This study provides an overview of the Indigenous patients who underwent cardiac surgery, the types of surgeries performed, prevalence of complications as well as patient compliance with outpatient appointments. The aim was to obtain information that can be used to improve service delivery and redesign practices to reduce the burden of disease in Indigenous patients.

Methods

The Prince Charles Hospital (TPCH) is a major tertiary cardiothoracic referral hospital in Brisbane (Queensland) Australia. It is a centre that performs approximately 1,100 open-heart surgeries per year. Following institutional ethics approval, Aboriginal Australian and Torres Strait Islander patients who had cardiac surgery with cardiopulmonary bypass between 2002 and 2009 were identified through the hospital cardiothoracic audit database. A detailed retrospective review of patients' medical notes was done and the data was collected in a systemised database. The patients were divided into two groups comprising isolated coronary artery bypass graft surgery and valve surgery, with or without coronary artery bypass graft surgery. The National Death Index Registry (NDIR) was linked with the hospital cardiac audit database to identify patients who had died.

Study end points

The primary endpoints were:

- In-hospital mortality (less than 28 days)
- In-hospital complications (less than 28 days)
- Attendance in outpatient clinic
- Medications use at outpatient review
- Post discharge complications (after 28 days)
- Late mortality (after 28 days)

Indigenous patients were those who had identified themselves as of either Aboriginal or Torres Strait origin. Patients' charts were reviewed for peri-operative, short term and long-term complications. Early graft failure was defined as failure that occurred within 30 days whereas late graft failure was that which occurred thereafter.

Results

Data were collected over seven years and 2.3% (220/9,698) of patients who underwent cardiac surgery were Indigenous Australians; 85.0% (187/220) of which were Aboriginal and 15.0% (33/220) Torres Strait Islanders. The demographics of these patients are shown in Table 1. Males represented 59.5% (131/220) of these patients. The mean ages were 52 and 66 years for the Indigenous and non-Indigenous patients respectively. The mean body mass index (BMI) for the Indigenous patients was 29 kg/m².

Table 1 Baseline Characteristics of Patients.

◦ Male	131
◦ Female	89
Total	220
Age (years) mean	52
Operative Status	
Elective	122
Emergency	8
Urgent	90
Risk Factors	
Diabetes	105
Smoking history	169
Hypertension	147
Cholesterol	142
Family history of heart disease	56
New York Heart Association scale (NYHA)	
Class I	8
Class II	43
Class III	42
Class IV	32
Renal Function (creatinine in mmol/l)	
Pre-operative Cr < 110	165
Pre-operative Cr > 110	55
Respiratory disease	34
Ejection Fraction (EF %)	
EF < 30%	11
EF 30-49	57
EF > 50%	152

CABG-coronary artery bypass graft, Cr-creatinine, EF-Ejection Fraction, NYHA-New York Heart Association.

Almost half of the 220 Indigenous patients (i.e. 47.7%) had diabetes. Of those with diabetes, 21.9% (23/105) were insulin dependent and 63.8% (67/105) were on oral hypoglycaemic agents. A history of smoking was reported in 76.9% (169/220) of all Indigenous patients and 34.9% (59/169) of the smoking Indigenous patients were still smoking at the time of surgery. Only 5.91% (13/220) patients were on permanent haemodialysis.

Non-elective surgery was performed in 44.5% (98/220) of Indigenous patients. The most common surgery was coronary artery bypass graft surgery (CABG) and was performed in 75.0% (165/220) (Table 2). The mean age for CABG was

Table 2 Cardiac operations.

Isolated CABG	143
Combined CABG and valve surgery	22
Valve operation without CABG	49
Other types of surgeries	6
Total	220

CABG- Coronary artery bypass grafting.

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