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There was no difference in stiffness between KH and STS hearts at the commencement of ischaemia (p = 0.23) or the end (p = 0.74).

There was no stiffness difference in hearts that did recover compared with those that did not, at the beginning (p = 0.877) or end of ischaemia (p = 0.166).

Conclusion: SWE demonstrates changes in stiffness over time in warm ischaemic hearts. This may be of use in assessing hearts donated after circulatory death. SWE could not discriminate on the basis of stiffness between preservation solution or functional recovery for cold ischaemic hearts.

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A Catchment the Size of Switzerland: Outcomes for Patients Presenting with out of Hospital Cardiac Arrest Remains a Challenge

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Introduction: In-hospital mortality (IHM) for cardiac arrest patients remains a challenge in our institution with a large catchment. Primary coronary intervention (PCI) continues to have poorer outcomes when patients present following cardiac arrest, in cardiogenic shock (CS) or receive cardiopulmonary resuscitation (CPR).

Method: We analysed all activations of the cardiac catheterisation laboratory in 2018. We assessed rates of IHM and 30 day MACE following PCI in relation to the following variables: in-hospital (IHCA) or out-of-hospital cardiac arrest (OHCA), shockable or non-shockable rhythms, intubation and cardiogenic shock. IHCA were classified as outside Canberra vs referral from peripheral hospitals.

Results: 203 consecutive activations were analysed. 76% were male with mean age 60.7 years. Females had a mean age of 69.4 years (p<0.0001). 110 (54%) activations occurred afterhours. 170 met STEMI criteria, 30 IHCA, 18 IHCA and 12 in CS. 9 patients (4.4%) required intubation prior to PCI. 36 (17.7%) had a shockable rhythm and 33 (16.3%) received CPR.

The mortality rates of OHCA compared to IHCA were 26.7% vs 44.4%, respectively (OR 0.45, 95% CI 0.13 to 1.56, p = 0.23). IHM rates were highest in patients receiving inotropes or intubation (42.9% and 39.1%). Mortality rates for females were higher than IHCA likely from referral hospital delays to PCI.

Conclusion: Our institution’s IHM rates in OHCA are higher than IHCA likely from referral hospital delays to PCI from inter-hospital transfers.

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A Prospective 3-Year Review of out of Hospital Cardiac Arrest Presentations to a University-Affiliated Tertiary Centre

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Introduction: Outcomes for out of hospital cardiac arrest (OHCA) have traditionally thought to be poor. We sought to investigate current OHCA outcomes and interventions in a contemporary cohort of Emergency Department (ED) patients. Further, we set out to assess the cohort for cases that could benefit from extracorporeal membrane oxygenation (ECMO) using published ECMO cardiopulmonary resuscitation (cCPR) eligibility criteria.

Methods: A prospective observational cohort study of all OHCA patients from 2016–2019 using Utstein reporting methods at a single tertiary centre. Data were collected on audit forms and then cross-checked against electronic medical records. Use of cardiac catheterisation was assessed and patients were retrospectively matched against eligibility criteria used by the Melbourne cCPR (CHEER) study.

Results: Between July 2016 and February 2019 there were 193,750 ED presentations and 251 OHCA cases. 3 cases were excluded after identification as ‘in-hospital’ arrests. Overall survival (30 days) was 23.4% (n = 96). The mean age of survivors was 55.4 years. Proportion of bystander CPR was 70.2% (n = 174). Initial shockable rhythms were reported in 38.7% (n = 96). 72 OHCA patients were assessed to have met the CHEER study eligibility criteria, of these 32 did not survive to hospital discharge. 35 patients received percutaneous coronary intervention, of these 40 survived to hospital discharge.

Conclusion: The results reflect a higher than traditionally expected OHCA survival rate in a contemporary cohort of ED patients. Further studies are needed to identify where future local quality improvement strategies should be focused.


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A Review of Pulse Generator Battery Life Amongst Explanted Pulse Generators

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Introduction: Cardiac implantable electronic devices (CIED) are becoming increasingly common in Australia, with...
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N. Aboustate 1

lar arrhythmias and risk of sudden cardiac death (SCD) in immunosuppression and optimal heart failure therapy.

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Background: Postural Orthostatic Tachycardia Syndrome (POTS) is a syndrome characterised by dysautonomia. It remains unknown if POTS individuals have abnormal cardiac electrical changes. Here we assessed electrocardiographic markers of interatrial and ventricular conduction delay in POTS compared to patients with vasovagal syncope (VVS).

Methods: Patients who met diagnostic criteria for POTS by tilt table test and free of other autonomic or structural heart disease were compared to VVS patients. 12 lead ECGs taken pre-treatment were digitised (minimum 8 good-quality signals) and analysed by a cardiologist blinded to treatment. P wave and RT dispersion (P30, RTD) were calculated (maximum – minimum P wave/RT interval duration). Peak of T to end of T wave (TpTe), a marker of transmural dispersion of ventricular repolarisation, also sensitive to sympathetic stimulation, was measured in lead II.

Results: 11 POTS patients were compared to 9 age and sex-matched VVS patients. Mean age was similar. Atrial volumes and left ventricular ejection fraction (LVEF) were normal in all patients. There was no difference in LVEF. POTS was associated with abnormal PWD (48±5, normal <38 ms) and higher RTD (6±7 ms); compared to VVS (31±4, P=0.02 and 46±6 ms; P=0.04); despite lower left atrial volume. Baseline TpTe did not differ.

Methods: The terms “Cardiac Sarcoidosis” AND “Implantable Cardioverter Defibrillator” AND “Sudden Cardiac Death” were searched on PubMed, EMBASE, and Scopus on 21st September 2018 yielding 759 articles. After exclusions, 12 studies met inclusion criteria.

Results: The 12 studies consisted of 612 patients with CS, of which 534 had ICD implanted for primary or secondary prevention. Assuming appropriate device therapy as a surrogate for SCD, the annual incidence of appropriate ICD therapies and SCD combined was 6.3% (95% CI 3.5–9.1) in primary prevention cohorts, 11.6% (95% CI 7.8–15.3) in secondary prevention cohorts, and 8.2% (95% CI 6.0–11.5) in both cohorts. The mean left ventricular ejection fraction (LVEF) was pooled as 59±7 (n=155) in primary prevention cohorts and 48±15 (n=48) in secondary prevention cohorts. However, the LVEF was 28±15 (n=28) in those with appropriate ICD therapy, and 49±16 (n=47) in those with ICDs without therapy.

Conclusion: The incidence of ventricular arrhythmias and SCD is high not only secondary but also in primary prevention cohorts of CS. This data support the role of implanting ICDs for primary prevention in patients with CS with mild to moderate reduction in LVEF.

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Abnormal Cardiac Electrical Remodelling in POTS: Mechanistic Insights on Potential Autonomic Dysregulation

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Background: Postural Orthostatic Tachycardia Syndrome (POTS) is a syndrome characterised by dysautonomia. It remains unknown if POTS individuals have abnormal cardiac electrical changes. Here we assessed electrocardiographic markers of interatrial and ventricular conduction delay in POTS compared to patients with vasovagal syncope (VVS).

Methods: Patients who met diagnostic criteria for POTS by tilt table test and free of other autonomic or structural heart disease were compared to VVS patients. 12 lead ECGs taken pre-treatment were digitised (minimum 8 good-quality signals) and analysed by a cardiologist blinded to treatment. P wave and RT dispersion (P30, RTD) were calculated (maximum – minimum P wave/RT interval duration). Peak of T to end of T wave (TpTe), a marker of transmural dispersion of ventricular repolarisation, also sensitive to sympathetic stimulation, was measured in lead II.

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A Systematic Review and Meta-Analysis on the Incidence of Appropriate Implantable Cardioverter Defibrillator Therapy and Sudden Cardiac Death in Cardiac Sarcoidosis

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Background: Implantation of implantable cardioverter defibrillator (ICD) is a Class IIb indication in patients with Cardiac Sarcoidosis and with LVEF 36–49% despite immunosuppression and optimal heart failure therapy.

Objectives: This systematic review and meta-analysis aimed to provide an estimate on the incidence of ventricular arrhythmias and risk of sudden cardiac death (SCD) in patients with CS.

Methods: Consecutive patients with CIEDs undergoing pulse generator replacement were retrospectively studied. Patients undergoing generator change for battery depletion were included. The duration from time of implant to generator change was calculated. The type of device, number of leads, indication, and manufacturer were recorded.

Results: 200 consecutive patients were included in the study. This included 54 single chamber devices, 138 dual chamber devices, and 8 biventricular devices. Fifty-seven of the devices were defibrillators. The manufacturer was Medtronic in 114 cases, St Jude Medical in 72 cases, and Boston Scientific in 15 cases. The mean battery life of single and dual chamber pacemakers was 9.6±1.8 years. The mean battery life of implantable defibrillators was 7.57±1.9 years. Pacemakers manufactured by St Jude Medical (9.7±1.9 years) and Medtronic (9.8±1.6 years) did not have a significantly different battery life (P=0.68). Medtronic pacemakers lasted significantly longer than those manufactured by Boston Scientific (8.7±0.9 years, P<0.01). There was no significant difference in defibrillator battery life between manufacturers.

Conclusion: The average battery life for single and dual chamber pacemakers is 9.7±1.6 years. The average battery life of defibrillators is shorter at 7.6±1.9 years.