Abstracts

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antiplatelet and anticoagulant agents. It would be useful to aid in earlier diagnosis of TC, which may minimise the potential risks associated with unnecessary use of antithrombotic agents.

Results: This retrospective study analysed troponin results of 240 patients diagnosed with TC from 2008 to 2018 at two tertiary centres in Victoria, Australia.

Methods: This retrospective study analysed troponin results of 240 patients diagnosed with TC from 2008 to 2018 at two tertiary centres in Victoria, Australia.

Results: 97% of patients in our cohort had at least one troponin (TnT) level above reference range (<0.05 ug/L). The mean troponin peak was 6.0 ±12 ug/L, and the majority (67.5%) of peak troponin values were under 5 ug/L, with wide variation (see figure). The highest troponin rise observed was 97.5 ug/L. The mean peak to initial troponin ratio was 24.9, with a mean absolute change of 3.2 ug/L, indicating significant interval change. Mean time from symptom onset to peak troponin was 17 hours (±25.7 hours).

Conclusions: This study demonstrates that patients with TC have troponin elevation of a comparable magnitude and pattern to that seen in MI. As such, it appears that troponin alone is not a reliable discriminator between TC and MI. Further studies examining other biochemical markers may be useful to aid in earlier diagnosis of TC, which may minimise the potential risks associated with unnecessary use of antithrombotic agents.

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Unanticipated Contribution of Pulsatility to Pump Thrombosis

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Background: Whether diminished pulsatility influences outcomes in patients with continuous-flow left ventricular assist devices (CF-LVAD) is largely underdetermined. We sought to characterise the relationship between measured flow pulsatility and outcomes in patients with a HeartWare CF-LVAD (HVAD). Pulsatility/mean flow was calculated for each patient at 1, 3, 6, 9 and 12 months from HVAD patient log files. Patients were divided into tertiles reflecting low, intermediate and high pulsatility based on their average PI. Baseline demographics and outcomes were compared between groups. Outcomes compared were gastrointestinal bleeding (GIB), neurological events (NE) and pump thrombus (PT).

Results: Patients were divided into tertiles reflecting low (n = 21), intermediate (n = 19) and high (n = 21) pulsatility. There were no significant differences in demographics between groups according to pulsatility. Surprisingly, PT rates were significantly higher (p = 0.013) in the high pulsatility (n = 6, 29%) group compared to the low (n = 0, 0%) and intermediate (n = 1, 5%) groups. Binary logistic regression yielded low trough flow as an independent predictor of PT (OR 0.205, p = 0.028). NE (p = 0.113) and GIB (p = 0.607) did not differ significantly between groups.

Conclusion: Flow PI was positively associated with PT, likely due to an effect of low trough flow. This presents an important potential target for future therapeutic intervention.

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Understanding the Prevalence and Patient Characteristics of Pulmonary Hypertension According to the Updated Haemodynamic Definition

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The widely accepted definition of pulmonary hypertension (PH) - a mean pulmonary artery pressure (mPAP) of >25 mmHg, has come under renewed focus at the 2018 6th world PH symposium with healthy human studies showing that, on average, the mPAP was 14 ±3.3 mmHg at rest. The mPAP is also affected by pulmonary artery wedge pressure (PAWP) and cardiac output (CO).

Aims: To provide a descriptive analysis of all patients with a mPAP of 21–25 mmHg referred to a specialist quaternary PH centre.

Methods: All patients referred for right heart catheter (RHC) at our institution between 2008 and 2018, with an mPAP of 21–25 mmHg pulmonary vascular resistance ≥3 Wood units, and PAWP ≤15 mmHg were included. Data were extracted from the medical records for: aetiology; six-minute walk test (6MWT), and mortality.

Results: 59 patients were included, representing 3.5% of all cases with an mPAP >20mmHg. The average age was 66.3 ±13.8 years. Average 6MWT was 338.3 ± 113.9 m. There were a total of 13 deaths over the study period. Patients were classified according to aetiology of PH: 13 (22%) of patients were classified as group 1, 12 (20%) group 2, 22 (37%) group 3, 8 (14%) group 4, 1 (1.7%) group 5, and 3 (5%) unclear pathology.
Conclusion: The updated haemodynamic definition of PH, whilst more closely reflecting human physiological values, is likely to detect patients earlier in the course of their disease and will be of prognostic significance. It could be argued that the same precision applied to mPAP could also be applied to PAWP.

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Unsupervised Machine Learning Identifies Treatment Response to Spironolactone in Patients with Heart Failure with Preserved Ejection Fraction: A TOPCAT Substudy

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Background: Heart Failure with Preserved Ejection Fraction (HFpEF) is a heterogeneous condition with several subgroups. Spironolactone has been postulated as beneficial therapy in certain patients, i.e. lower ejection fractions or lower natriuretic peptide levels. We aimed to determine whether machine learning (ML) methods could identify treatment responders.

Methods: TOPCAT was a large international randomised trial of spironolactone in patients with HFpEF. We utilised data from 654 patients from the Americas echocardiographic arm. Dimensionality reduction was applied using t-stochastic neighbour embedding, followed by hierarchical cluster analysis, then long-term outcomes were stratified by treatment.

Results: Three clusters were identified. Patients in Cluster 1 (n = 285) demonstrated the most favourable long-term outcome across the follow up period with no significant response to spironolactone (p = 0.62). Of the two remaining clusters with similar long-term outcomes, Cluster 2 (n = 234) patients demonstrated no significant response to spironolactone (p = 0.68) whereas those in cluster 3 (n = 135) had early divergence in survival curves with significant treatment response (p = 0.002). Compared with the other Clusters 1 and 2, Cluster 3 patients were younger (66 vs 72 vs 73, p < 0.001), had the lowest EF (57 vs 62 vs 58, p < 0.001) and lowest natriuretic peptides.

Conclusion: Unsupervised ML methods can identify homogeneous subgroups within HFpEF and potentially determine patients who may respond more favourably to treatment with spironolactone.

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Uptake of Influenza, Pneumococcal and Herpes Zoster Vaccination as a Preventative Strategy for Adverse Cardiovascular Outcomes in a High-Risk Cohort of Patients with Chronic Heart Failure

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Background: Vaccination is a cheap and effective intervention that may prevent infection, which is a recognised trigger for cardiovascular events, and contributes to all-cause mortality. The annual influenza, and five-yearly pneumococcal and herpes zoster vaccinations, are provided free of cost to high-risk patients (i.e. those with chronic conditions, indigenous people and those aged over 65). Western Sydney has a high prevalence of at-risk patients.

Objectives: The aim of our study was to determine the uptake of influenza, pneumococcal and herpes zoster vaccinations in patients with heart failure presenting to a tertiary referral hospital in Western Sydney.

Methods: Consecutive patients with LVEF <50% attending the outpatient Heart Failure Service Clinic at Blacktown Hospital between 2015–2018 were identified. Patient demographics, medical conditions and vaccination status were collected. Only patients whose vaccination status was verified with their general practitioner were examined.

Results: A total of 331 patients met the inclusion criteria but only 119 (mean age 67 ± 14 years; 62% male) had their vaccination status confirmed by their general practitioner. Influenza vaccination uptake increased from 46% in 2015 to 69% in 2018. Interestingly, only 0.2% was vaccinated against pneumococcus in 2015 and 12% in 2018, compared to 0% receiving the herpes zoster vaccination in 2015 and 7% in 2017.

Conclusions: The uptake of influenza and pneumococcal vaccinations amongst a cohort of high-risk patients in Western Sydney is increasing, but remains below the national average, highlighting the need for more effective strategies to