33

STANDARD ASSESSMENT OF CHRONIC HEART FAILURE PATIENTS MAY UNDERESTIMATE SUBCLINICAL VOLUME OVERLOAD

M Shahzad, K McDonald, R Fox, E Shorten, A Brennan, C Halley, M Barrett, M Ledwidge. *St. Vincent's University Hospital, Dublin, Ireland*

10.1136/heartjnl-2021-ICS.33

Introduction Volume control is critical in HF management. Clinical methods to assess volume status are neither sensitive nor specific enough to reliably predict volume overload. This lack of precision in volume assessment may leave patients at risk for decompensation or renal dysfunction. Ultrasound evaluation of inferior vena cava size has been useful to estimate and grade hemodynamic congestion in HF patients. Purpose We set out to examine the additional information provided by analysis of the IVC regarding volume status in a cohort of patients with chronic stable heart failure. We assessed NYHA class, clinical volume status, and inferior vena cava metrics.

Methods This is an ongoing observational study. This abstract presents data on the first 91. All patients had established HF and were attending for regular annual clinic review. Patients had a history obtained as a marker of clinical stability and clinical examination to assess for any signs of clinical congestion. These patients also had a complete Doppler-echocardiographic examination including assessment of E-e prime (E/e') and inferior vena cava including long axis diameter and collapsibility index (IVCCI) as assessed by the reduction in size from baseline with inspiratory manoeuvre. Volume overload was defined as IVC diameter (IVCD) > 2cm with IVCCI < 50%. All patients had a natriuretic peptide assessment (NT-proBNP) and renal function measured.

Results To date sixty percent of the patients had reduced ejection fraction heart failure (LVEF < 50%). Ninety five percent (87) had normal volume status on exam. The remaining four patients with volume overload on physical exam were omitted from further analysis. Thirty one patients (35%) had Doppler-echocardiographic evidence of volume overload without signs of congestion on physical exam (IVCD M = 2.19, SD = 0.49 and IVCCI < 50%). These patients had higher values of NT-proBNP (M = 3,692, SD = 5,247pg/ml, p = 0.005) and E/e' M = 11.5, SD = 3.3, P = 0.18) compared with those with normal IVC metrics. Sixty five percent of the total group had atrial fibrillation. Within this subcohort those with IVC metrics of volume overload also had a higher value for NT-proBNP (M = 4,266.7, SD = 5,904.5, p < 0.001) compared to those in AF a normal IVC metrics. Similar results were obtained in HF-pEF and HF-rEF cohorts.

Conclusion In conclusion, standard assessment of patients with stable chronic heart failure by symptom assessment and physical exam underestimates subclinical volume overload. This potentially leaves patients at higher risk for decompensation. Consideration of focused analysis of IVC and E-e prime in such patients in particular those with markedly elevated NP may be of value in diagnosing and managing this cohort.

34

ASSESSMENT OF SPEED OF HEART RATE RECOVERY AS A MODIFIABLE RISK FACTOR THROUGH CARDIAC REHABILITATION

R Armstrong, P Wheen, L Brandon, RA Kenny, A Maree. *St James's Hospital, Dublin, Ireland*

10.1136/heartjnl-2021-ICS.34

Introduction The rate of recovery of heart rate between 10 and 20 seconds following orthostatic challenge (HRR10-20) has been shown to be a risk factor for all-cause mortality. Cardiac rehabilitation has been shown to improve prognosis. We aim to determine if by assessing the physiological parameter of HRR10-20 in patients before, during and after cardiac rehabilitation, we can determine which patients are at greater risk of future events, and if this known risk factor for all-cause mortality can be further classified as a modifiable risk factor in cardiac disease.

Methods A case-control study was performed from July 2019 until March 2020. Cases were patients aged >18 years of age who had PCI, CABG, TAVI or SAVR at the beginning of phase 2 of cardiac rehabilitation. A control group was taken from the same cohort of patients, but of whom turned down further cardiac rehabilitation. Assessment of HRR10-20 was performed at the beginning of rehabilitation, at a 6-weeks, and again at a 12-weeks. During active stand, real time heart rate, blood pressure and ECG recordings were taken via non-invasive digital photoplethysmography (Finometer, Finapres Medical systems, Arnhem, The Netherlands). Statistical analysis was performed using GraphPad Prism 9.0.2. Pearson's correlation coefficient was used to determine the relationship between change in HRR10-20 from baseline to 12 weeks and completion of the rehabilitation programme, and a Student's T test used to determine statistical significance of the difference between the two independent groups (p ≤ 0.05 was considered statistically significant).

Results Overall, 37 participants were recruited, 25 of which rehabilitation was commenced and completed versus 12 not commenced. Completion of cardiac rehabilitation was correlated with improvement of HRR10-20 from baseline to 12 weeks (r=0.6104 p≤0.0001). Through the 6 week and 12-week time periods, differences in HRR10-20 are noted between the two groups – at the 6-week time point the group in rehabilitation improved their HRR10-20 to -5.74±1.91, while the control group disimproved to 1.85±0.77 (p≤0.0001). This pattern is repeated at the 12-week interval, with the rehabilitation group maintaining a marginal improvement -6.33±2.32, and the control group deteriorating further to 4.05±1.27 (p≤0.0001). HRR10-20 in the control group deteriorated between week 0 and week 6 by 5.94 (p≤0.0001), between week 6 and 3 months this further disimproved by 2.2 (p=0.004). This is in comparison to a trend of improvement in HRR10-20 in the rehabilitation group; between week 0 and 6 weeks HRR10-20 improved by -2.21 (p=0.1799),

Effect of Cardiac Rehabilitation on HRR10-20

Abstract 34 Figure 1