Canadian Journal of Cardiology
Volume 37 2021

P123
A MULTI-CENTRE STUDY EXAMINING THE ASSOCIATION BETWEEN NATRIURETIC PEPTIDES AND MORTALITY IN PATIENTS WITH A LEFT VENTRICULAR ASSIST DEVICE

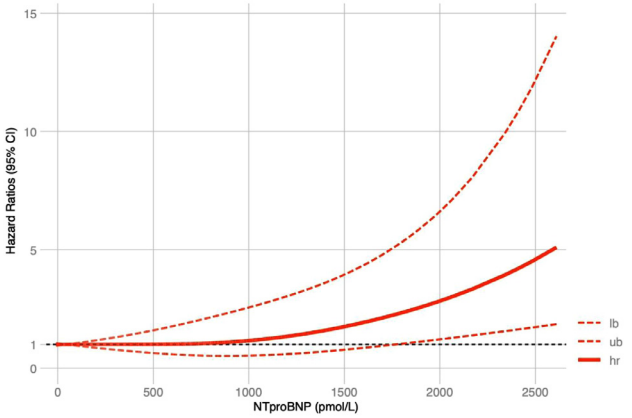
M Lambadaris, J Vishram-Nielsen, F Foroutan, F Gustafsson, A Alba

Toronto, Ontario

BACKGROUND: In patients with advanced heart failure, a left ventricular assist device (LVAD) offers improved survival and quality of life. NTproBNP is commonly measured during routine follow-up in patients with a LVAD. While NTproBNP has been extensively studied in ambulatory heart failure patients, and proven a useful prognostic marker, there is scarce evidence on its prognostic utility in LVAD patients. This multi-centre study aims to evaluate the association between NTproBNP and mortality in patients with a LVAD as bridge to heart transplant or destination therapy.

METHODS AND RESULTS: This is a two-center retrospective cohort study including 165 consecutive adults discharged after implantation of a durable continuous flow LVAD either as bridge to heart transplant, or as destination therapy between 2006 and 2020 at the Toronto General Hospital (Toronto, ON) and the Rigshospitalet (Copenhangen, Denmark). Uni- and multi-variable extended Cox proportional hazard models were used to evaluate the association between multiple measures of NTproBNP and mortality in LVAD patients. Of the 165 patients included in the analysis, 84 patients died and 76 patients were successfully bridged to heart transplant. Multi-variable analysis were adjusted for age, gender, type of cardiomyopathy, hypertension and diabetes. There was an increasing mortality risk with increasing NTproBNP values (Figure), with a significantly increased risk in patients with NTproBNP >1600 pmol/L in comparison to < 400 pmol/L (HR 4.4, CI 2.1-10.0).

CONCLUSION: Our multi-centre study demonstrates that in patients with a LVAD for bridge to transplantation or destination therapy, NTproBNP values exceeding 1600 pmol/L are significantly associated with increased risk of mortality. Larger studies may be useful to examine the prognostic utility of lower levels of NTproBNP and its association with mortality or heart-failure related hospitalizations.



Canadian Cardiovascular Society (CCS) Abstracts — Imaging

Featured Research — Winner

P124
CARDIAC PHENOTYPING OF SARS-COV-2 IN BC: A PROSPECTIVE ECHO STUDY WITH STRAIN IMAGING

J Yim, M Tsang, A Venkataraman, S Balthazaar, K Gin, J Jue, P Nair, C Luong, D Yeung, R Moss, S Virani, J McKay, M Williams, E Sayre, P Abolmaesumi, T Tsang

Vancouver, British Columbia

BACKGROUND: In December of 2019, Coronavirus Disease 2019 (COVID-19) caused by severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) emerged, resulting in a global pandemic with 125 million cases worldwide. Few prospective echocardiographic studies have been performed to characterize cardiac manifestations of patients who have recovered from acute COVID-19 infection. There are limited data on the residual echocardiographic findings including strain analysis of post-COVID patients. One aim of our CIHR-funded study is to prospectively phenotype post-COVID patients using conventional echocardiography including strain imaging.

METHODS AND RESULTS: All patients discharged from hospital following acute COVID-19 infection are systematically followed in the Post-COVID-19 Recovery Clinic at Vancouver General Hospital and St. Paul's Hospital. At about 4-12 weeks post diagnosis, patients undergo comprehensive echocardiographic assessment with conventional echocardiography including strain analysis. Left ventricular ejection fraction (LVEF) was assessed by 3D, 2D Biplane Simpson's, or visual estimate. Left ventricular global longitudinal strain (GLS), was measured using a vendor-independent 2D speckle-tracking software (TomTec). A total of 127 patients (53% female, mean age 58 years) were included in our analyses. At baseline, cardiac conditions were present in 58% of the patients (15% coronary artery disease, 4% heart failure, 44% hypertension, 10% atrial fibrillation), while the remainder were free of cardiac conditions. COVID-19 serious complications were present in 79% of the patients (76% pneumonia, 37% ICU admission, 21% intubation, 1% myocarditis). Normal LVEF was seen in 96% of cohort defined in this study as EF≥54%, and 97% had normal RV systolic function. A high proportion (53%) had abnormal LV GLS defined as < 18%. Average LV GLS in septal and inferior segments were lower compared to the rest. In patients without pre-existing cardiac conditions, LVEF was abnormal in only 1.9% but LV GLS was abnormal in 46%.

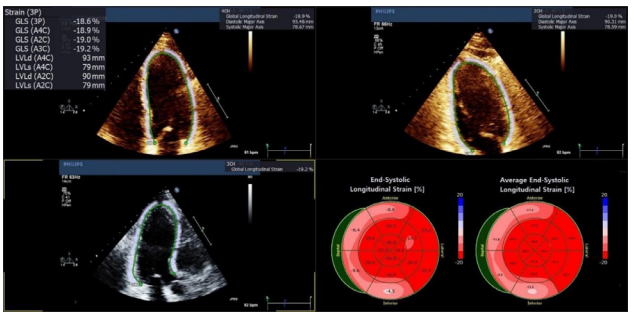
CONCLUSION: Most post-COVID patients had normal LVEF at 4-12 weeks post positive test, but over half had abnormal LV GLS. Even when patients with pre-existing cardiac conditions were excluded, 46% had abnormal global strain. There appeared to be a high predilection for septal, and to a lesser extent, inferior wall involvement, giving an appearance of a "C" sign on the bullseye strain map. Further studies are

needed to confirm whether these abnormalities are consistently found and to understand the long-term cardiac sequelae of SARS-CoV-2 infection.

Table 1. Patient characteristics

	All patients (N = 127)
Age (years)	58 ± 17
Female	67 (53)
Median time from diagnosis (days)	80
Past medical history	
Prior cardiac disease	74 (58)
Hypertension	56 (44)
Diabetes mellitus	36 (28)
Dyslipidemia	35 (28)
Coronary artery disease	19 (15)
Atrial fibrillation	13 (10)
Heart failure	5 (4)
COVID-19 complications	
Pneumonia	97 (76)
Intensive care unit admission	47 (37)
Intubation	24 (21)
Dialysis	3 (2)
Myocarditis	1 (1)

Continuous variables expressed as mean ± SD unless otherwise specified.
Categorical variables expressed as number (%).



Canadian Institutes of Health Research (CIHR)

CNCT Best Abstract Award

P125
ANTI-INFLAMMATORY EFFECT OF BIOLOGIC THERAPY IN PATIENTS WITH PSORIATIC DISEASE COMPARED WITH TREATMENT WITH NON-BIOLOGIC DMARDS: A PROSPECTIVE COHORT FDG-PET STUDY

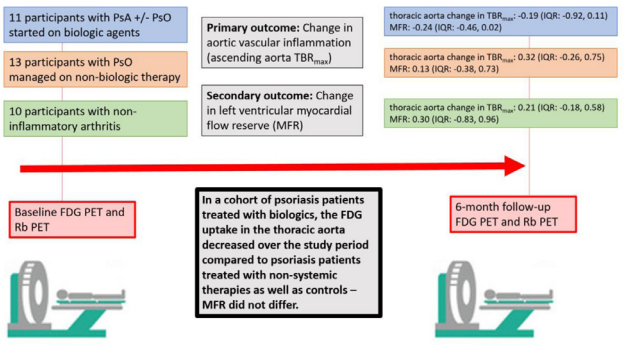
K Boczar, S Glassman, J Wang, W Zeng, R de Kemp, N Ward, R Beanlands, C Fehlmann, G Wells, J Karsh, G Dwivedi

Nepean, Ontario

BACKGROUND: Psoriatic arthritis (PsA) and cutaneous psoriasis (PsO) are linked with an increased risk of adverse cardiovascular events. We hypothesized that central vascular inflammation on F-18-fluorodeoxyglucose (FDG) positron emission tomography (PET) in the ascending aorta would improve in these patients following therapy with biologic agents compared to PsO patients receiving non-biologic therapy and non-inflammatory control patients. We also postulated that in patients responding to biologics, there would an improvement in coronary microvascular dysfunction as measured by myocardial blood flow reserve (MFR) determined by rubidium-82 (82Rb) PET.

METHODS AND RESULTS: We studied 3 patient cohorts (patients with PsA and/or PsO started on biologic agents, patients with PsO managed on non-biologic therapy, and control patients with non-inflammatory arthritis). The primary outcome of our study was the change in vascular inflammation, estimated as the target-to-background ratio (TBR) by FDG PET in the most diseased segment of the ascending aorta at baseline compared to 6-month follow-up (TBRmax). We also performed 82Rb PET studies at baseline and 6-month follow-up to determine any changes on left ventricular MFR. A total of 34 participants were enrolled in the study (11 PsA and/or PsO patients on biologic agents, 13 patients in PsO group managed on non-biologic therapy, and 10 in the non-inflammatory control group). The majority (64.7%) of participants were men and the median age was 62 years (IQR: 48, 69). A significant drop in the thoracic aorta uptake was observed in the biologic-treated group (thoracic aorta change in TBRmax: -0.46±0.55) when compared to the change in the thoracic aorta FDG uptake of the PsO group treated with non-biologic therapy (thoracic aorta change in TBRmax: 0.23±0.67). Furthermore, the group with imaging evidence of a response to biologic agents (i.e. TBRmax drop > median value of 7%) maintained MFR (3.40±1.23 MFR to 3.5±1.2 MFR over 6 months) when compared to the group with a below median response on TBRmax which had a drop in MFR (2.9±0.8 MFR to 2.2±0.6 over 6 months) (P=0.03).

CONCLUSION: In a cohort of psoriasis patients treated with biologics, the FDG uptake in the thoracic aorta decreased over the study period compared to psoriasis patients treated with non-systemic therapies as well as controls. Additionally, psoriasis patients treated with biologics who demonstrated a significant anti-inflammatory response on FDG PET imaging, maintained their MFR compared to non-responders. This study supports the notion that there is a positive impact of immune therapies on vascular inflammation and microvascular disease in patients with chronic inflammation.



Canadian Institutes of Health Research - Fellowship