



THE UNIVERSITY OF BRITISH COLUMBIA

Department of Medicine
Faculty of Medicine

A background image featuring medical supplies: a petri dish with red agar, a white surgical mask, a syringe with red liquid, and several red and white pills.

38th ANNUAL RESIDENT RESEARCH DAY

UBC Robson Square
800 Robson St | Vancouver, BC

Wednesday, May 18, 2022
9:30am - 5:00pm

PODIUM PRESENTATIONS

HEALTH AND SOCIAL OUTCOMES FOR HOMELESS PERSONS ATTENDING A TRANSITIONAL CARE CENTRE FOLLOWING HOSPITAL DISCHARGE

Alec Yu

Background

People identifying as homeless in Metro Vancouver are becoming more medically complex, with a greater proportion of those aged 55+ (25%) and living with two or more medical comorbidities (60%) than ever before.[1] Previous studies done in Vancouver have demonstrated the efficacy of early access to supportive housing and social service navigation in helping these individuals secure stable housing long term.[2][3]

Objective

We aimed to evaluate the medical and social outcomes of a novel Transitional Care Centre (TCC) based out of St. Paul's Hospital.

Methods

The Transitional Care Centre (TCC) is a facility on the grounds of St. Paul's Hospital that provides housing, meals, and access to services including peer navigation to individuals facing homelessness upon hospital discharge. We conducted a mixed-methods prospective cohort study of clients at the TCC between June 2019 – June 2021. All participating clients consented to a semi-structured interview, demographic survey, and medical chart review during their stay at the TCC and again 12 months following discharge from the TCC. We then used statistical regression modelling and thematic analysis to describe these quantitative and qualitative data sets respectively.

Results

55 TCC clients completed the baseline interview and demographic surveys; unfortunately, only 22 completed the 12-month follow-up interview due in part to limitations imposed by the COVID-19 pandemic. Clients of the TCC had fewer hospital admissions in the 12 months after discharge from the TCC in comparison to the 12 months prior (2.37 vs 0.53, $p=0.02$), and a trend towards fewer emergency department visits that was not statistically significant (4.95 vs 3.26, $p=0.13$). Many clients highlighted the important role of having immediate access to safe and convenient housing in maintaining health, connecting to services, and accessing long-term housing or addictions programming. Some clients voiced concerns about the food services, curfew, and access to personal hygiene products.

Conclusion

Providing homeless persons with short-term transitional housing after hospital discharge improved their perceived ability to meet health and housing goals and was associated with fewer hospital readmissions.

[1] BC Non-Profit Housing Association (2020). 2020 Homeless Count in Metro Vancouver. Prepared for the Greater Vancouver Reaching Home Community Entity. Vancouver, BC: Metro Vancouver

[2] Lauren B. Currie, Akm Moniruzzaman, Michelle L. Patterson, & Julian M. Somers (2014). At Home/Chez Soi Project: Vancouver Site Final Report. Calgary, AB: Mental Health Commission of Canada.

[3] Yu A, Gadermann A, Palepu A. (2019). Strengths, challenges, and gaps in linkage to primary care among hospitalized individuals who are homeless in Vancouver, British Columbia. *Journal of Social Distress and the Homeless*.

POST-COVID DYSPNEA: PREVALENCE, PREDICTORS AND OUTCOMES IN THE UBC RESPIRATORY CLINIC COHORT

Japnam Grewal

Background

Previous literature has established that dyspnea is a common symptom following COVID-19 infection, but our understanding of the mechanisms of dyspnea remains limited. In particular, it is unclear whether persistent post-COVID dyspnea is contributed to by extrapulmonary and psychosocial factors.

Objective

The aim of this study is to determine the prevalence, severity, and predictors of dyspnea at 12 months following COVID-19 infection, and to describe the respiratory, cardiac, and patient-reported outcomes in patients with persistent post-COVID dyspnea.

Method

We enrolled a prospective cohort of patients from the VGH and SPH Post-COVID-19 Respiratory Clinic who had been admitted to hospital with COVID-19 between March and June 2020. Inclusion criteria included hospitalization for COVID-19, ability to complete study questionnaires in English, and provision of informed consent. Patients were initially assessed 3 months post-discharge, with subsequent follow-up occurring at the 6- and 12-month mark. Patients completed a standardised set of questionnaires and cardiopulmonary investigations at each visit.

Results

Clinically meaningful dyspnea was present in 46% of patients at 12 months following COVID-19 infection. There was worse mood, sleep, quality of life, and frailty in patients with dyspnea when compared to patients without dyspnea. There was no statistically significant difference in pulmonary function testing (PFT) findings when comparing patients with and without dyspnea at 12 months post-COVID-19 infection. Of the 35 patients with dyspnea at 12 months, 22 (63%) had PFT abnormalities, 7 (20%) had abnormal troponin or BNP levels, and 13 (37%) had a mood abnormality, and 5 (14%) had none of these findings. Dyspnea and a mood abnormality at 3 months post-COVID-19 infection predicted dyspnea at 12 months post-COVID.

Conclusion

Post-COVID dyspnea is a multifactorial entity, and mood appears to play a significant role. The persistent experience of dyspnea and associated morbidity creates the need for early identification of patients with dyspnea post-COVID infection, with early referral to both pulmonary and psychiatric resources.

VARIABILITY IN NOAC DOSE ELIGIBILITY AND ADJUSTMENT ACCORDING TO RENAL FORMULAE AND CLINICAL OUTCOMES IN ATRIAL FIBRILLATION PATIENTS WITH AND WITHOUT CKD: INSIGHTS FROM ORBIT AF II

Ren Jie Robert Yao, DaJuanicia Holmes, Jason G. Andrade, Adeera Levin, Jonathan P. Piccini, Christopher B. Fordyce

Background

NOACs are used for prevention of thromboembolism in AF patients and require dose adjustment based on kidney function. The most common estimates of kidney function employed in clinical practice are derived from eGFR, but eCrCl is recommended by product monographs.

Objective

We sought to evaluate misclassification of NOAC renal dosing using eGFR versus eCrCl.

Methods

We included patients enrolled in ORBIT-AF II trial. eGFR was calculated using both MDRD and CKD-EPI formulae. Dose adjustments and eligibility were based on landmark trials. Dosing was considered inappropriate when use of eGFR resulted in a lower (under-treatment) or higher (over-treatment) dose than that recommended by eCrCl. The primary outcome of major adverse cardiovascular and neurological events (MACNE) was a composite of cardiovascular death, stroke or systemic embolism, and myocardial infarction. Sensitivity analysis was performed for the subgroup of patients with CKD.

Results

Among 8,727 in the overall cohort, agreement between CrCl and eGFR was observed in 93.5-93.8% of patients. Among 2,184 patients with CKD, the agreement between eCrCl and eGFR was 79.9-80.7%. Dosing misclassification was observed in 11.5% of rivaroxaban, and 1.1% of dabigatran and apixaban treated patients. Patients receiving an inappropriate NOAC dose had a lower mean eCrCl and eGFR. Undertreated patients were older and of lower body weight compared to overtreated and appropriately dosed patients. Dosing misclassification was more frequent in the CKD population (41.9% of rivaroxaban, 5.7% of dabigatran and 4.6% apixaban patients). At one-year, undertreated patients in the CKD group had significantly greater MACNE [adjusted HR 2.90 (1.09-7.75) compared to appropriate NOAC dosing group $p = 0.03$].

Conclusions

The prevalence of NOAC dosing misclassification NOACs was high when using eGFR, particularly among those with CKD. Among patients with CKD, potential undertreatment due to inappropriate and off-label renal formulae may result in worse clinical outcomes. These findings highlight the importance of using eCrCl, and not eGFR, for dose-adjustment in all AF patients receiving NOACs.

BIALLELIC LOSS OF TP53, PTEN, AND RB1 ASSOCIATES WITH AGGRESSIVE CLINICAL FEATURES AND POOR OUTCOMES IN METASTATIC CASTRATION RESISTANT PROSTATE CANCER (MCRPC)

Corinne Maurice-Dror, Nicolette M. Fonseca, Cameron Herberts, Edmond M. Kwan, Catarina Kollmannsberger, Wilson Tu, Daniel J. Khalaf, Matti Annala, Elena Schönlau, Cecily Q. Bernales, Gráinne Donnellan, Joanna Vergidis, Krista Noonan, Daygen L. Finch, Muhammad Zulfiqar, Stacy Miller, Alexander W. Wyatt, Kim N. Chi.

Background

Deleterious alterations in tumor suppressor genes (TSGs) TP53, RB1, and PTEN are potential markers of small cell neuroendocrine prostate cancer (SCNP), and androgen receptor pathway inhibitor (ARPI) resistance. We examined the outcomes and clinical features of mCRPC patients (pts) harboring biallelic loss in 0, 1, 2 or all 3 TSGs.

Methods

We identified 210 consecutive mCRPC pts providing ≥ 1 plasma cell-free DNA sample with $\geq 20\%$ circulating tumor DNA fraction (ctDNA%) during their mCRPC disease course. ctDNA% $\geq 20\%$ enabled sensitive characterization of biallelic TSG loss (including by homozygous deletions and mutation plus somatic loss-of-heterozygosity; LOH). Patient records were reviewed for baseline characteristics, SCNP histology, and presence of liver metastases. We investigated associations between TSG loss and the following clinical outcomes: PSA response (PSA decline $\geq 50\%$ (PSA50 RR)), progression free survival (PFS) on 1L therapy, and overall survival (OS) from 1L therapy.

Results

Median follow-up was 16.5 months (range: 0.4-112.4) and OS event rate was 95%. Median age at 1L mCRPC was 71 years (range: 48-98). Most pts were ECOG PS 0-1 (79%) and 13% had liver metastases. 91% received ARPI for 1L mCRPC and 7% received ARPI for castration-sensitive disease. TP53 was primarily inactivated by somatic mutation plus LOH (90%), whereas RB1 (71%) and PTEN (86%) were more commonly inactivated by homozygous deletions. Compared to pts without evidence of biallelic TSG loss, pts with loss of 3 TSGs were significantly enriched for de-novo M1 disease (86 vs. 60%, $p=0.05$) and liver metastases (28.5 vs. 6.8%, $p<0.05$). Ten pts (4.7%) had histologically confirmed SCNP and provided ctDNA at time of SCNP diagnosis. Of these, 7 (70%) had biallelic loss of ≥ 2 TSGs. For all pts receiving 1L therapy, loss of ≥ 1 TSG(s) was associated with decreased OS (HR: 1.86, 95% CI: 1.40-2.48, $p<0.01$) and PFS (HR:1.74, 95% CI 1.29-2.34, $p<0.01$) compared to pts with no biallelic TSG loss. Furthermore, a cumulative increase in the number of TSGs lost was associated with an incremental reduction in OS and PFS (Table 1).

Conclusions

In a cohort enriched for poor prognosis (i.e. high ctDNA%), cumulative loss of TSGs is associated with aggressive disease features and poor clinical outcomes. These patients may benefit from alternative treatment intensification strategies.

ASSOCIATION OF FRAILITY AND RESIDENTIAL LOCATION WITH IN-HOSPITAL AND LONG-TERM OUTCOMES AMONG ST-ELEVATION MYOCARDIAL INFARCTION PATIENTS RECEIVING PRIMARY PERCUTANEOUS CORONARY INTERVENTION

Farshad Hosseini MD, Ian Pitcher MD, Mehima Kang BSc, Martha Mackay PhD RN, Joel Singer PhD, Terry Lee PhD, Kenneth Madden MD MSc, Graham C. Wong MD MPH, Christopher B. Fordyce MD MHS MSc

Background

Frailty is generally a marker of worse prognosis, but its prevalence and use as a risk marker is not routinely incorporated in clinical practice. Similarly, the cardiovascular outcomes in patients from a long-term care facility (LTCF) compared to those from home remains unknown.

Objective

To evaluate the impact of frailty on in-hospital and post-discharge 1-year outcomes in STEMI patients aged 65 or older and to identify if LTCF residence prior to the index event is a predictor of adverse outcomes in this population.

Methods

A retrospective chart review was conducted on 1,579 STEMI patients ≥ 65 years in the Vancouver Coastal Health region who underwent primary PCI (pPCI) between 2007 and 2020. Those who had undergone fibrinolytic therapy or had an out-of-hospital cardiac arrest were excluded. A frailty index (FI) was determined using the health deficit accumulation model with frail patients being defined as those with a FI > 0.25 . Patient's place of residence (LTCF or not) was documented at the time of admission. The primary outcome was 1-year all-cause mortality. The secondary outcomes were 1-year cardiac mortality, in-hospital all-cause mortality, and the composite of adverse in-hospital outcomes including all-cause mortality, cardiogenic shock, heart failure, re-infarction, major bleeding, or stroke.

Results

There were 228 (14.4%) frail patients with 100 (6.3%) originating from LTCF. After multivariable adjustment, worsening frailty was associated with increased 1-year all-cause mortality (odds ratio [OR], 1.48; 95% CI, 1.10-2.00, $P=0.011$), in-hospital all-cause mortality (OR, 1.88; 95% confidence interval [CI], 1.50-2.35, $P<0.001$) and the composite adverse outcome (OR, 1.46; 95% CI, 1.27-1.68, $P<0.001$). Baseline LTCF residence was not associated with 1-year all-cause mortality (OR, 1.43; 95% CI, 0.62-3.27; $P=0.402$), but was associated with increased cardiac mortality at 1-year (OR, 4.22; 95% CI, 1.57-11.32, $P=0.004$).

Conclusion

Among STEMI patients receiving pPCI, frailty was common and independently associated with increased in-hospital and long-term adverse outcomes. LTCF residence on admission was associated with increased long-term cardiac mortality. These findings raise the need for early recognition of frailty and implementation of a comprehensive approach towards the management of frail patients. It also suggests that LTCF residence on admission should not be used as a marker of frailty.

POSTER PRESENTATIONS

NATURAL HISTORY OF UNTREATED IDIOPATHIC FREQUENT PREMATURE VENTRICULAR COMPLEXES

Jacky Tang, Michael Thiebert, Farshad Hosseini, Marc Deyell

Supervisor: Dr. Marc Deyell

Background

Frequent premature ventricular complexes (PVCs) have been associated with the development of reversible cardiomyopathy, although the risk is unclear in patients without underlying structural heart disease. First line medical therapy has not been shown to consistently provide significant PVC burden reduction compared to conservative monitoring, and catheter ablation carries a small but serious risk of major complications.

Objective

We aimed to study the natural history of frequent PVCs in the absence of structural cardiac disease by examining the rate of spontaneous resolution and development of left ventricular dysfunction.

Methods

The BC-PVC registry prospectively enrolled patients with frequent PVCs (defined as $\geq 5\%$ PVC burden in 24 hours) between 2012 to 2022. Patients without structural heart disease who were not initiated on suppressive therapy (anti-arrhythmic drugs or catheter ablation) were followed serially with ambulatory ECG and echocardiology. The primary arrhythmic outcome was PVC resolution (defined as $< 1\%$ PVC burden in 24 hours). The planned statistical analysis will include time to primary arrhythmic outcome described by a Kaplan-Meier curve, while univariate predictors of spontaneous resolution will be analyzed with a Cox proportional-hazards regression model.

Results

286 patients met inclusion criteria (mean age 54.4 years, 55.6% female) with a median initial PVC burden of 21.0%. The following are preliminary descriptive statistics (formal analysis pending). Spontaneous PVC resolution was documented in 119 of 286 patients (41.6%). 16 of 286 patients (6.0%) met the secondary adverse composite outcome (new left ventricular dysfunction, heart failure hospitalization, or cardiovascular mortality). There were no cases of cardiovascular mortality. Class I/III anti-arrhythmic medications and/or catheter ablation was eventually initiated in 36 of 286 patients (12.6%).

THE ASSOCIATION BETWEEN MEDIAN INCOME AND SEVERITY OF PULMONARY HYPERTENSION AT DIAGNOSIS AND RISK AT FOLLOW UP IN A PUBLIC HEALTH CARE SYSTEM

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Introduction

Patient income has been associated with clinical outcomes in pulmonary arterial hypertension (PAH). However, much of this work was done in private health care systems. In Canada, the public health care system covers the majority of health care costs. We evaluated whether a patient's neighborhood median after tax income (ATIPPE) remained associated with severity of illness at diagnosis and markers of risk at most recent follow up.

Methods

We identified all WHO Group 1 or 4 patients from our PAH registry. Postal code data was used to classify patients according to median income using ATIPPE (neighborhood after tax income per single person equivalent). ATIPPE was generated using statistics Canada. In our study, we compared the baseline cardiac catheterization data by income to evaluate whether low income was associated with late presentation. Using available follow up catheterization, 6 minute walk test, functional class, biomarker and echocardiographic data, we classified patients as low, intermediate or high risk. We identified whether median income was associated with risk at follow up. Multivariate logistic regression and linear regression were used as appropriate and results were adjusted for age, sex and body mass index. P-values < 0.01 were taken as significant given multiple comparisons.

Results

Of 344 patients identified, the mean age was 61±16 years, and 71% were females. Mean ATIPPE was 46,000 ±12,000 Canadian dollars/year. Full catheterization data was available for 344 patients at baseline. For each \$1000 increase ATIPPE, there were lower mean PA pressure and pulmonary vascular resistance (-0.13 mmHg, 95%CI -0.24, -0.02, P=0.02) and (-0.06 WU, 95%CI -0.1, -0.01, P=0.015), respectively. At last follow up, NYHA data was available for 324 patients. 6MWD and echocardiogram data was available for 327 patients. For each \$1000 increase in ATIPPE, there was a higher likelihood of low risk classification (OR 1.01, 95%CI 1.00-1.03, P=0.006).

Conclusions

In our large tertiary PAH referral center, operating in a country with a public health care system, we found a strong trend towards less advanced disease at diagnosis and significantly lower risk at follow up. This suggests that even in a public health care system, income is associated with outcomes in PAH.

A SCOPING REVIEW OF THE VALIDITY EVIDENCE FOR ENTRUSTMENT RATING SCALES

A. Patel, S. Addison, J. Sherbino, M. Spencer, R. Hatala

Background

Entrustment ratings are intended to reflect a supervisor's entrustment of a task to a learner and this approach to workplace-based assessment is increasingly common. We undertook a scoping review of the current validity evidence of entrustment-based rating scales.

Methods

We used systematic review methodology to search, identify, appraise and abstract relevant articles from 2005 to September 2020, across 4 databases. A total of 1613 potentially relevant articles were identified. After applying the inclusion and exclusion criteria, 128 articles met the inclusion criteria for this scoping review. Thematic analysis of the included studies was organized according to Kane's validity framework, with iterative discussion among authors until consensus was reached for interpretation of the results.

Results

One hundred and twenty-three included studies were quantitative and of moderate methodological quality and 5 were qualitative. The majority of studies examined postgraduate learners (88%) who were assessed by a single faculty member (81%) assessing a procedural task (63%). The Zwisch scale was the most commonly examined entrustment rating (26%) followed by the OSCORE (18%). For assessment of a procedural task, there was consistency surrounding the purpose of the assessment. However, for non-procedural tasks there were a range of assessment intents. While many components of the validity argument have been examined, there were limited data on the reliability of the assessments and limited evidence examining the implications of the assessments for both learners and programs.

Conclusions

Scholarship on entrustment-rating scales is rapidly growing, particularly in the surgical context. However, significant gaps in the validity argument supporting these tools remain and further research is required.

NEW-ONSET IMMUNE-MEDIATED DISEASE FOLLOWING SARS-COV-2 VACCINATION: A CASE SERIES

Dr. Sarah Hansen, India Dhillon, Dr. Natasha Dehghan, Dr. Jennifer Reynolds

Background

The COVID-19 vaccine campaign is the largest and fastest in history, and the first use of mRNA vaccines outside a research setting. Limited evidence exists regarding the risk of developing immune-mediated disease [IMD] other than myocarditis and vaccine-induced thrombotic thrombocytopenia following SARS-CoV-2 vaccination.

Objective

To report the baseline characteristics and outcomes of patients with new-onset of IMD following SARS-CoV-2 vaccination referred to rheumatology in BC.

Methods

Adult patients who developed new-onset IMD within 30 days of receiving a dose of SARS-CoV-2 vaccine between December 2020 and March 2022 were identified by survey of the BC Society of Rheumatology. Relevant data was extracted by retrospective chart review.

Results

Thirty patients with IMD following SARS-CoV-2 vaccination were identified. Seventy percent were female. The mean age was 59 years [range: 26-80]. The mean time from vaccine administration to symptom onset was 8.56 days [range: 0-30]. New-onset IMD arose following both mRNA [Pfizer-BioNTech n=15, 50%; Moderna n=4, 13.3%] and viral vector [AstraZeneca n=6, 20%] vaccines, and following the first, second, and third doses in 53.3%, 33.3%, and 10.0% of cases respectively. Inflammatory arthritis [n=15, 50%] was the most common diagnosis. Three patients had connective tissue disease [SLE, anti-synthetase syndrome, rapidly progressive ILD and skin thickening without Raynaud's, nailfold capillary abnormalities, or ANA positivity], three had vasculitis [giant cell arteritis, cryoglobulinemic vasculitis, and isolated aortitis], two had adult-onset Still's disease, and one had eosinophilic fasciitis. Three patients had life-threatening disease, five had severe disease requiring hospitalization that was not life-threatening, 19 had moderate disease, and three had mild disease. The majority [73%] had a chronic course requiring continued DMARD administration at last follow-up.

Conclusions

Individuals without pre-existing rheumatologic disease may develop IMD following SARS-CoV-2 vaccination. IMD may be chronic and require initiation of long-term immunosuppression. Given the uncontrolled nature of this study, no conclusions can be drawn as to the relative risk of developing IMD following SARS-CoV-2 vaccination relative to the risk following other vaccines or the baseline population rate.

CLINICAL OUTCOMES IN FRESH VERSUS CRYOPRESERVED HEMATOPOIETIC STEM CELL PRODUCTS IN BC: A RETROSPECTIVE STUDY

Dr. Bo Angela Wan

Supervisors: Dr. Kevin Hay, Dr. Claudie Roy

Background

Allogeneic hematopoietic stem cell transplants (HSCT) have been the mainstay of treatment of many hematologic malignancies. Conventionally, fresh donor hematopoietic progenitor cell (HPC) products are used but the COVID-19 pandemic forced many centres, including ours, to rely on cryopreserved HPC products.

Objective

To characterize the clinically relevant allogeneic HSCT outcomes in cryopreserved HPC products in BC, and to identify differences compared to a recent historical cohort of patients who received fresh HPC products.

Methods

A retrospective chart review was conducted on all adult patients who received a cryopreserved bone marrow or peripheral blood HSCT in British Columbia between February 2017 and January 2022. Data including HPC product characteristics, patient demographics, and clinical outcomes were extracted and compared to an existing database of patients who received fresh HPC products between June 2017 and May 2020. Baseline characteristics and outcomes including engraftment rate, complications, and relapse will be described. Adjusted probabilities of overall survival and disease-free survival will be estimated with a Cox proportional-hazards regression model. The probabilities will be adjusted for age, diagnosis, transplant type, disease status at transplantation, and CMV status. Survival functions will be compared with a historic cohort of HSCT using fresh HPCs

Results

138 frozen HPC transplants and 133 fresh HPC transplants were included in our study. The median age was 56 (Inter quartile range 40, 63), and 39% were female. Myeloablative condition was performed in 70% of cryopreserved transplants versus 78% of fresh transplants. Peripheral HPC products represented 90% of cryopreserved transplants vs 92% of fresh transplants. Neutrophil and platelet engraftment occurred on average at 20 and 21 days respectively in cryopreserved transplants, versus 21 and 25 days in fresh transplants. Statistical analysis is pending at the time of writing and will be included in the presentation.