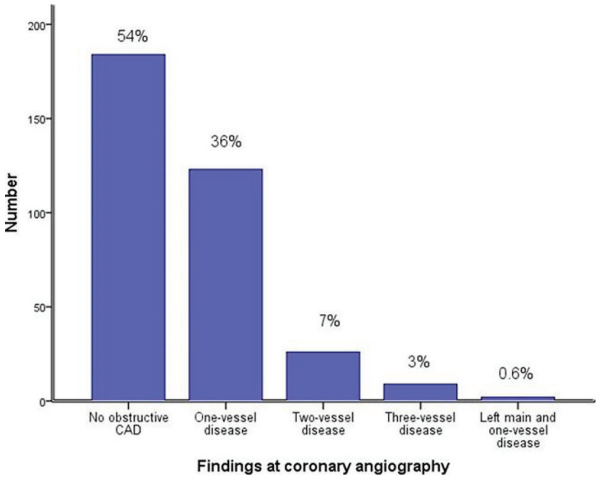
hospital mortality following AMI. Appropriate targeted preventive programs are required for these groups of patients.

P6045

Reinfarction in patients with previous myocardial infarction with non-obstructive coronary arteries (MINOCA), findings at coronary angiography

A.M. Nordenskjold[1], B. Lagerqvist[2], T. Baron[2], T. Jernberg[2], P. Tornvall[3], B. Lindahl[2]. *[1]Faculty of Medicine and Health, Örebro University, Department of Cardiology, Örebro, Sweden; [2]Uppsala University, Sweden, Department of Medical Sciences and Uppsala Clinical Research center, Uppsala, Sweden; [3]Department of Clinical Sciences, Danderyds Hospital, Karolinska Institutet, Stockholm, Sweden*

Background: Myocardial infarction (MI) with non-obstructive coronary arteries (MINOCA) is an increasingly recognized entity occurring in 5–10% of all patients with MI.
Purpose: To investigate the prevalence of reinfarction and the status of the coronary arteries at readmission in patients with previous MINOCA.
Methods: We conducted an observational study of MINOCA patients recorded in the SWEDEHEART registry, between July 2003 and June 2013 and followed until December 2013 for a new MI. We identified 9,092 unique patients with MINOCA out of 199,163 MI admissions in total. The 570 (6.3%) MINOCA patients that were hospitalized due to a new MI during follow-up constituted the study population.
Results: The mean age in patients with a new MI was 69.1 years and 59.1% were women. The mean time to readmission was 25 months (IQR 5–39 months). A total of 340 (60%) underwent a new coronary angiography and out of them 160 (47%) had obstructive coronary artery disease (CAD) with diameter stenosis ≥50% and the remaining 180 (53%) a new MINOCA. The majority (67%) of the patients with a new MINOCA were women whereas the majority (58%) of patients with a MI associated with obstructive CAD were men (p<0.001). Diabetes (p=0.01), peripheral vascular disease (p=0.02), higher levels of creatinine (p=0.02) and ST-elevation at presentation (p<0.001) were more common in patients with obstructive CAD than in patients with new MINOCA. Of the 160 patients with obstructive CAD, 123 had one-vessel, 26 had two-vessel, 9 had three-vessel disease and two had left main together with one-vessel disease.



Conclusions: A new MI occurred in 6% of the MINOCA patients within a mean of approximately two years. Significant CAD had developed in almost half of the patients with a new MI, in the vast majority one-vessel disease. In the remaining half, no significant stenosis could be observed.

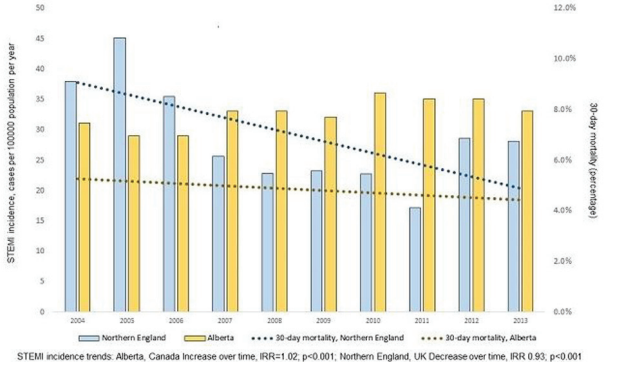
P6046

Temporal trends of ST-elevation myocardial infarction incidence and 30-day mortality: a transatlantic comparison between Alberta, Canada and Northern England, United Kingdom

R. Potluri, D. Tran, P. Carter, R.C. Welsh, P. Kaul, K. Bainey. *University of Alberta, Canadian VIGOUR Centre, Edmonton, Canada*

Background/Introduction: Both the United Kingdom (UK) and Canada have publically funded health care systems; however, the evolution of ST-myocardial infarction (STEMI) care, with respect to the use of primary percutaneous coronary intervention (PPCI) and thrombolysis, has differed significantly across the two countries. Whether these differences in practice patterns have resulted in differing patient outcomes over time has not been previously examined.
Purpose: We examined temporal trends in incidence, clinical characteristics, reperfusion strategies and mortality outcomes in patients hospitalized with STEMI in Alberta, Canada and Northern England, UK.
Methods: We evaluated 11, 864 Albertans and 3, 694 Northern England patients enrolled between 01/01/04 and 12/31/13 in the Alberta Contemporary Acute Coronary Syndrome Patients Invasive Treatment Strategies (COAPT) and Algorithm for Comorbidities, Associations, Length of stay and Mortality (ACALM) registries, respectively. Poisson regression was used to assess trends in annual incidence rate per 100,000 population. Primary outcome was 30-day all-cause mortality.
Results: The incidence of STEMI in Northern England has decreased over time (incident rate ratio [IRR]=0.93; p<0.001) while it has increased slightly in Alberta (IRR=1.02; p<0.001) (Figure). Over the study period, the mean age decreased in Alberta (61.9 [13.3] to 60.4 [12.6] years, p=0.009) and remained similar in Northern England (61.3 [13.1] to 59.5 [14.6] years, p=0.187). The mean Charlson risk score increased in Alberta (1.56 to 1.63, p=0.028) but remained similar in Northern England (1.62 to 1.76, p=0.18). Average length of stay decreased from 9.2 to 7.3 days (p<0.001) and 6.4 days to 4.9 days (p=0.02), respectively. PPCI rates in Northern England increased as the dominant strategy (2004–2013: 57% to 77%, p-trend<0.01) while in Alberta they remained consistent as part of a dual reperfusion strategy (2009–2013: 47.6% to 43.8% p-trend=0.11). While rates remained low and did not change over time in Alberta (p=0.22), there was a significant decline in 30-day mortality rates in Northern England (Figure, p≤0.01).

Figure 1: STEMI incidence and 30-day mortality comparison between Alberta, Canada and Northern England, UK



STEMI incidence trends: Alberta, Canada Increase over time, IRR=1.02; p<0.001; Northern England, UK Decrease over time, IRR 0.93; p<0.001

Conclusions: In this natural experiment of STEMI in the UK and Canada, we found differing patterns in the incidence and survival over time between the two countries. The extent to which inter-country differences in health policy, use of PPCI, and prevention measures, such as performance related incentives in the UK, account for these observations requires further investigation.

P6047

Difference of vascular reaction to 2nd generation DES between stable angina and ST elevation myocardial infarction: Results from MECHANISM optical coherence tomography study

Y.T. Tsukiyama[1], T.S. Shinke[1], T.I. Ito[2], M.I. Ishida[2], H.O. Otake[1], T.F. Fusazaki[2], T.K. Kikuchi[3], T.O. Okamura[4], T.M. Morita[5], T.K. Kataoka[5], K.H. Hibi[6], T.A. Akasaka[7], S.I. Ishihara[8], Y.M. Morino[2], K.H. Hirata[1]. *[1]Kobe University, Division of Cardiovascular Medicine, Kobe, Japan; [2]Iwate University Hospital, Division of Cardiovascular Medicine, Morioka, Japan, Iwate, Japan; [3]Edogawa Hospital, Tokyo, Japan; [4]Yamaguchi University Graduate School of Medicine, Ube, Japan; [5]Osaka General Medical Center, Osaka, Japan; [6]Yokohama City University Medical Center, Yokohama, Japan; [7]Wakayama Medical University, Wakayama, Japan; [8]Mimihara General Hospital, Sakai, Japan*

Background: A previous study reported that vessel healing in ST elevation myocardial infarction (STEMI) patients treated with 1st-generation drug-eluting stent (DES) is delayed compared with stable angina (SAP). However, vascular healing to 2nd-generation DES has not been fully elucidated in STEMI and SAP.
Purpose: The aim of this study was to assess vascular reaction to 2nd generation DES for treatment of STEMI and SAP patients.
Methods: Optical coherence tomography (OCT) images were acquired immediately and 12 months after PCI. We evaluated in-stent tissue (IST)s. ISTs were classified to thrombus (Th), irregular protrusion (IRP) and smooth protrusion (SP). We measured maximum area and % length of ISTs, a total length divided by stent

Optical coherence tomography analysis

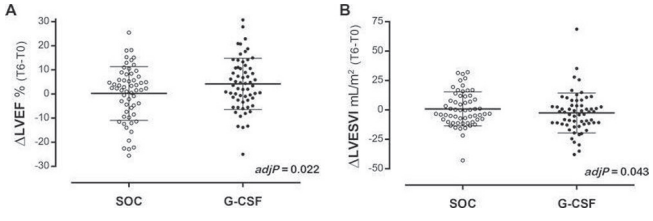
Variable	Elective (n=87)	STEMI (n=90)	p value
Maximum area of Th post PCI (mm^2)	0.34±0.49	0.82±0.99	<0.001
% Length of Th post PCI (mm)	6.81±8.99	12.73±14.27	0.001
Maximum area of IRP post PCI (mm^2)	0.11±0.26	0.82±1.08	<0.001
% Length of IRP post PCI (mm)	2.45±6.46	16.84±17.93	<0.001
Maximum area of SP post PCI (mm^2)	0.39±0.56	0.27±0.36	0.09
% Length of SP post PCI (mm)	6.01±7.53	5.69±7.13	0.77
Maximum area of Th 12 months after PCI (mm^2)	0.002±0.022	0.036±0.131	0.02
% Length of Th 12 months after PCI (mm)	0.04±0.34	0.98±3.65	0.02
Maximum area of IRP 12 months after PCI (mm^2)	0.00	0.03±0.14	0.04
% Length of IRP 12 months after PCI (mm)	0.00	0.35±1.80	0.07
Maximum area of SP 12 months after PCI (mm^2)	0.03±0.12	0.00	0.06
% Length of SP 12 months after PCI (mm)	0.22±1.13	0.00	0.08
% Uncovered struts 12 months after PCI (%)	0.53±1.19	4.67±6.35	<0.001

length × 100. Furthermore, we measured % uncovered strut, number of uncovered strut divided by total number of strut × 100.
Results: Finally, 83 patients (87 stents) were enrolled in MECHANISM-elective trial and 90 patients (90 stents) in MECHANISM-AMI trial. The maximum area and % length of Th and IRP post index PCI were significantly greater in MECHANISM-AMI patients compared with MECHANISM-Elective, but the quantitative measures of SP were not different. Those significant difference has been unchanged even 12 months after PCI. % uncovered strut was more frequent 12 months after PCI in MECHANISM-AMI (table).
Conclusion: The MECHANISM registry demonstrated that vessel healing at the stented lesion in STEMI patients treated with 2nd DES were delayed compared with SAP.

P6048
G-CSF for STEMI: results of the STEM-AMI OUTCOME CMR Sub-study

G. Pompilio[1], G. Pontone[1], G.I. Colombo[1], B. Bassetti[1], S. Righetti[2], L. Squadroni[3], J. Campodonico[1], L. Monti[4], L. Lenatti[5], C. Facchini[6], L. Mircoli[7], G. Esposito[8], L. Cacciavillani[9], S. Pidello[10], F. Achilli[2]. *[1]Cardiology Center Monzino IRCCS, Milan, Italy; [2]San Gerardo Hospital, Monza, Italy; [3]San Carlo Hospital, Milan, Italy; [4]Istituto Clinico Humanitas, Milan, Italy; [5]Alessandro Manzoni Hospital, Lecco, Italy; [6]Bassini Hospital, Cinisello Balsamo, Italy; [7]IRCCS Fondazione Ca' Granda Ospedale Maggiore Policlinico, Milan, Italy; [8]Federico II University Hospital, Naples, Italy; [9]University Hospital of Padova, Padua, Italy; [10]Hospital 'Città della Salute e della Scienza di Torino', Turin, Italy*

Background: In the previous STEM-AMI Phase II trial, we reported that early administration of G-CSF, additional to standard of care (SOC), in patients with anterior STEMI and ejection fraction (EF) ≤45% after successful PCI, significantly attenuated left ventricular (LV) adverse remodeling in terms of absolute end-diastolic volume (EDV) up to 3 years, as assessed by cardiac MR (CMR).
Purpose: The STEM-AMI OUTCOME CMR Sub-study was adequately powered to conclusively evaluate at CMR the effects of early subcutaneous administration of G-CSF on LV remodeling and EF in a STEMI population with LV dysfunction (EF ≤45%) after PCI.
Methods: In the context of the Italian multicenter STEM-AMI OUTCOME Phase III trial (NCT01969890), the CMR Sub-study has enrolled, from 10 centers during a 3 year period, 120 consecutive patients with large STEMI (symptoms to balloon time >2 and <24 hours and within 24 hours from successful PCI). Sixty-one patients were randomized to SOC+G-CSF, 59 patients to SOC. All patients underwent CMR 7 days (T0) and 6 months (T6) after STEMI. CMR imaging was analyzed by blinded experts.
Results: The two groups were similar for clinical characteristics, cardiovascular risk factors and admission treatment. G-CSF group showed a trend for a larger myocardial infarction than in the SOC group (CK-MB peak, mean ± SEM, 254±25 vs. 208±23 mg/ml in G-CSF and SOC, respectively, P=0.10) and longer symptom-to-balloon time (348±33 vs. 270±28 min, P=0.08). Baseline echocardiographic EF at enrollment was not significantly different between the two groups (38.5%±0.7 vs. 38.8%±0.6, P=0.72), as well as baseline CMR-derived EF (44.7%±1.3 vs. 47.1%±1.2, P=0.16).
At 6 months, only the G-CSF group showed a significant increase in CMR-EF (T6-T0 4.2%±1.4, P=0.003), whereas no changes were observed in the SOC group (0.2%±1.5, P=0.88). Notably, the difference between the changes from T0 to T6 in G-CSF vs. SOC was significant when adjusted for peak myocardial enzymes and symptom-to-balloon time (+4.0%±2.0, adjP=0.022; Figure A). This was paralleled by a significant reduction in indexed end-systolic volume (T6-T0 -4.2±4.1 vs. +1.9±3.7 mL/m^2 in G-CSF and SOC, respectively; difference between the changes 6.1±2.1 mL/m^2, adjP=0.043; Figure B).



Conclusion(s): In an adequately powered study, we confirm that G-CSF exerted a beneficial effect in terms of global systolic function and adverse remodeling, when administered in addition to SOC in patients with LV dysfunction after large STEMI. These results may pave the way for a new cardioprotective treatment in STEMI.
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P6049
Regional differences in process of care and clinical outcome among patients with ST-elevation myocardial infarction in Canada and the United Kingdom

K. Bainey, D. Tran, R. Potluri, P. Carter, R.C. Welsh, P. Kaul. *University of Alberta, Canadian VIGOUR Centre, Edmonton, Canada*

Background/Introduction: Inter-country comparisons can serve as natural experiments to assess the effectiveness of alternative systems of care for homogenous patient populations.
Purpose: We evaluated differences in clinical characteristics, reperfusion strategies employed, and clinical outcomes of patients hospitalized with an ST-elevation myocardial infarction (STEMI) in Canada and the United Kingdom (UK).
Methods: We compared 6,547 Albertans and 1,345 Northern England patients hospitalized for STEMI from 2009 to 2013 enrolled in the Alberta Contemporary Acute Coronary Syndrome Patients Invasive Treatment Strategies (COAPT) and Algorithm for Comorbidities, Associations, Length of stay and Mortality (ACALM) registries, respectively.
Results: As seen in the Table, Alberta patients were similar in age, but had fewer females than patients in the UK. Rates of hypertension and diabetes were higher in Alberta, but rates of heart failure and atrial fibrillation were higher in the UK cohort. A pharmacoinvasive (PI) approach (fibrinolysis + PCI) was used more frequently in Alberta while the majority of UK patients received primary percutaneous coronary intervention (PPCI). Almost 30% of patients received no reperfusion in Alberta. Median length of stay (LOS) was shorter in the UK. In a multivariable logistic regression model, there was no difference in 30-day mortality between the two regions (adjusted OR (aOR) 0.86, 95% CI 0.64–1.16, p=0.32). Shorter LOS was associated with reduced 30-day mortality (OR 0.89, 95% CI 0.87–0.92, p<0.01). There was a trend towards PI strategy being associated with lower risk (aOR 0.68, 95% CI 0.45–1.04, p=0.08), while no reperfusion was associated with a higher risk of 30-day mortality (aOR 2.16, 95% CI 1.69–2.76, p<0.001) compared to PPCI.

	Alberta, Canada (n=6,547) (3 catheterization sites serving 4.1 M residents)	Northern England, UK (n=1,345) (5 catheterization sites serving 1.4 M residents)	p-value
Selected Baseline Characteristics			
Age, years (median,IQR)	59 (52-68)	59 (51-69)	0.75
Female, n (%)	22.4	25.4	0.02
Hypertension (%)	49	44.8	0.01
Diabetes (%)	19.1	16.6	0.03
Heart failure (%)	7.7	19.6	<0.001
Atrial fibrillation (%)	6.2	8.6	0.001
Charlson score (mean, SD)	1.62 (1.02)	1.69 (1.16)	0.05
Reperfusion Strategy, n (%)			
Primary percutaneous coronary intervention (PPCI)	2,991 (45.7)	1,071 (79.6)	<0.001
Fibrinolysis + PCI (pharmacoinvasive approach)	1,257 (19.2)	61 (4.5)	
Fibrinolysis only	454 (6.9)	4 (0.3)	
No reperfusion	1,845 (28.2)	209 (15.5)	
Clinical Outcome			
Length of stay, days (median, IQR)	5 (4-7)	3 (2-5)	<0.001
30-day mortality (%)	4.7	5.8	0.08

Table

Conclusions: Clear inter-country differences in process of care exist in treatment of STEMI; however, they do not appear to result in significant differences in survival. Further efforts in both regions (particularly in Alberta) are required to improve outcomes in patients without reperfusion. Finally, investigation into costs of reperfusion strategies for STEMI in the two health care systems would be of interest given similar survival.

CARDIAC CT IN PATIENTS WITH VALVULAR HEART DISEASE

P6050
CT based assessment of left ventricular reverse remodeling after transcatheter aortic valve implantation

B. Szilveszter[1], D. Oren[1], M. Kolossvary[1], J. Karady[1], B. Vattay[1], Á Jermendy[1], A. Bartykowszki[1], A. Panajotu[1], F. Suhai[1], A. Nagy[2], A. Apor[2], B. Merkely[2], P. Maurovich-Horvat[1]. *[1]Semmelweis University Heart Center, Cardiac Imaging Dept. MTA-SE "Lendület" Cardiovascular Imaging Research Group, Budapest, Hungary; [2]Semmelweis University Heart Center, Budapest, Hungary*

Background: Severe aortic valve stenosis (AS) results in left sided ventricular (LV) hypertrophy and remodelling. Transcatheter aortic valve implantation (TAVI) has emerged as a safe and effective alternative to surgical aortic valve replacement for patients with severe, symptomatic AS and high surgical risk. Computed tomography angiography (CTA) is progressively being used for the planning and follow-up of TAVI.
Purpose: We aimed to evaluate predictors of left ventricular reverse remodeling after TAVI based on LV mass changes on CT imaging.
Methods: We included a total of eighty patients who underwent retrospectively