

Abstract 35 Figure 2

of AAA (EVAR). (Cardiac: $n = 8$, $\beta_i = 2.96$ (se = 1.27), $p = 0.02$, $\tau_{u2} = 0.00$; renal: $n = 8$, $\beta_i = 2.50$ (se = 1.31), $p = 0.056$, $\tau_{u2} = 0.01$).

Conflict of Interest None

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TRANS-MYOCARDIAL EXTRACTION OF ENDOTHELIN-1 CORRELATES WITH INCREASED MICROVASCULAR RESISTANCE FOLLOWING PERCUTANEOUS CORONARY INTERVENTION

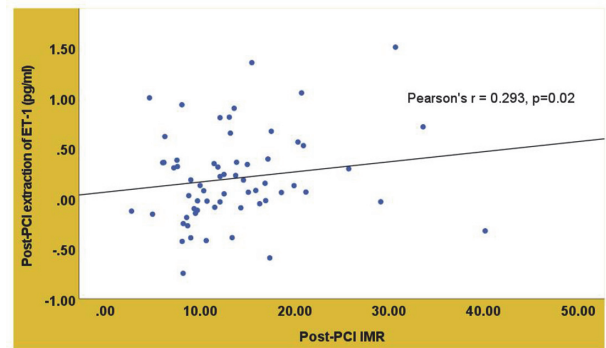
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Introduction Coronary microvascular dysfunction (CMD) can persist following successful percutaneous coronary intervention (PCI). Endothelin-1 (ET-1) is a potent vasoconstrictor and may be an important mediator of CMD. We sought to assess the trans-myocardial gradient (TMG – coronary sinus minus coronary root levels) of ET-1 and its precursor - Big ET-1 and assess the correlation with pressure-wire indices of CMD: coronary flow reserve (CFR) and index of microvascular resistance (IMR).

Methods Paired blood samples from the aortic root and coronary sinus were collected before and after pressure wire guided PCI from patients with stable angina. Plasma was then analysed using specific enzyme linked immunosorbent assay (ELISA) for quantification of ET-1 and Big ET-1 and correlated with pressure-wire data.

Results Samples were analysed from 66 patients. Both mean ET-1 and Big ET-1 concentrations increased post-PCI in both the aorta (ET-1: 1.0 ± 0.4 pg/ml to 1.4 ± 0.4 pg/ml, $p < 0.0001$ and Big ET-1: 2.8 ± 1.3 pg/ml to 3.4 ± 1.6 pg/ml, $p < 0.0001$) and coronary sinus (ET-1: 1.0 ± 0.3 pg/ml to 1.2 ± 0.3 pg/ml, $p = 0.03$ and Big ET-1: 3.2 ± 1.7 pg/ml to 3.8 ± 1.5 pg/ml,



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$p = 0.01$). TMG extraction of ET-1 increased following PCI: 0.05 ± 0.25 pg/ml vs. -0.20 ± 0.41 pg/ml, $p = 0.01$. In contrast, there was TMG release of Big ET-1 before and after PCI: 0.46 ± 1.26 pg/ml vs. 0.38 ± 1.03 pg/ml, $p = 0.52$ (figure 1). ET-1 extraction correlated with IMR post-PCI (Pearson's $r = 0.293$, $p = 0.02$, figure 2). Patients with $CFR < 2$ post-PCI demonstrated a numerical trend towards higher mean ET-1 extraction than those with preserved CFR post-PCI (0.30 ± 0.51 pg/ml vs. 0.16 ± 0.42 pg/ml, $p = 0.31$) as did those with criteria for Type 4a Myocardial Infarction compared with those without (0.39 ± 0.57 vs. 0.15 ± 0.41 , $p = 0.11$).

Conclusions ET-1 and Big ET-1 significantly increase post-PCI. Trans-myocardial extraction of ET-1 increases post-PCI and correlates with post-PCI CMD.

Conflict of Interest none

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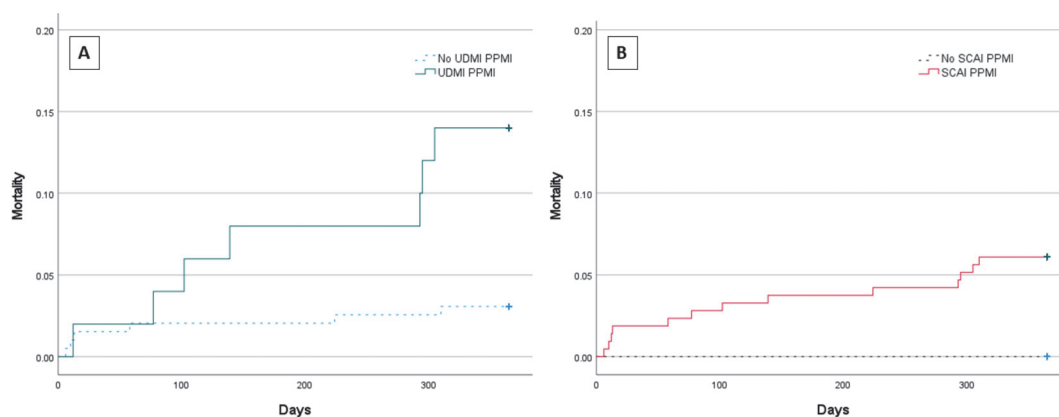
INCIDENCE AND ONE YEAR OUTCOME OF PERIPROCEDURAL MYOCARDIAL INFARCTION FOLLOWING CARDIAC SURGERY: ARE THE UNIVERSAL DEFINITION AND SCAI CRITERIA FIT FOR PURPOSE?

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Introduction The diagnosis and clinical implication of periprocedural myocardial infarction (PPMI) following coronary artery bypass grafting (CABG) is contentious, especially given its importance in the interpretation of trial data. Two accepted definitions of PPMI yield discrepant results. Little is known about the association between the diagnosis of PPMI, using high sensitivity troponin (hs-cTn), and medium term mortality in patients who undergo CABG, either alone or in conjunction with another procedure.

Method Consecutive patients admitted to a cardiothoracic critical care unit (CCCU) over a six month period following open cardiac surgery had hs-cTnI assay performed on admission and every day for forty-eight hours, regardless of whether there was a clinical indication. Patients were categorised as PPMI using both the Universal Definition of MI (UDMI) and Society of Cardiovascular Angiography and Interventions (SCAI) criteria. Comorbidity data, surgical details and clinical progress in CCCU were recorded. One year mortality data were obtained from NHS Digital.



Abstract 37 Figure 1 Kaplan Meier curves of one year mortality for PPMI; Panel A UDMI PPMI ($p=0.002$ (log-rank)); Panel B SCAI PPMI ($p=0.156$ (log-rank))

Results There were 245 CABG patients, of whom 20.4% met criteria for UDMI PPMI and 87.6% for SCAI UDMI. The diagnosis of UDMI PPMI was independently associated with one year mortality (hazard ratio 4.175 (95% confidence interval 1.281 – 13.608)), whereas there was no association between SCAI PPMI and one year mortality (figure 1). Of the 243 patients who had non CABG cardiac surgery, 11.4% met criteria for UDMI PPMI and 85.2% for SCAI PPMI but neither was associated with one year mortality.

Conclusions The incidence of SCAI PPMI in a real world cohort of cardiac surgery patients is so high as to be of limited clinical value. By contrast, a diagnosis of UDMI PPMI post CABG is independently associated with one year mortality, so may have clinical utility.

Conflict of Interest Beckman Coulter provided the assays used in my research but had no other role in the studies

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IDENTIFYING PREDICTIVE RISK FACTORS FOR PERMANENT PACEMAKER IMPLANTATION UP TO 30 DAYS POST-TAVI

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Introduction Conduction system abnormalities, including AV block, are amongst the most common complications of transcatheter aortic valve implantation (TAVI). Post-TAVI high degree AV block necessitates permanent pacemaker (PPM) implantation.

Purpose To assess the ability of standardly available pre-, intra- and post-TAVI factors to predict PPM implantation within 30-days post procedure.

Methods Demographic and clinical (pre-, intra-, and post-procedural) data including ECG parameters were collected from all patients who underwent TAVI at our centre from August 2017 to November 2020. Patients with pre-existing PPM were excluded from the study. Predictive factors were selected through univariate analysis, and selected characteristics were incorporated into a multivariate binomial logistic regression model, in order to create a 30-day PPM risk-prediction model. The Akaike information criterion (AIC) and area under

receiver operating curve (AUC/C-statistic) were used to assess discriminative performance.

Results In total, data from a total of 446 patients were analysed. Of these, 40 (8.97%) received PPM implantation within 30 days of the procedure. The mean age of the patients was 81.5 (± 7.3 SD) years; 99 (22.2%) had pre-existing first degree AV block, 55 (12.3%) had pre-existing left bundle branch block (LBBB) and 50 (11.2%) had pre-existing right bundle branch block (RBBB). Intra-procedurally 40 (9.0%) developed LBBB, 21 (4.7%) developed 3rd degree AV block, and 95 (21.3%) patients required temporary pacing wire (TPW) pacing. Post-procedurally, 138 (30.9%) exhibited AV block, 107 (24.0%) LBBB and 50 (11.2%) RBBB. The following factors met significance at multivariate logistic regression analysis: pre-TAVI RBBB (OR 6.62 [95% CI, 1.37-36.51]), intra-TAVI 3rd degree AV block (OR 12.80 [95% CI, 3.44-53.34]), intra-TAVI LBBB (OR 4.02 [95% CI, 1.28-12.53]), use of TPW pacing (OR 8.58 [95% CI, 3.19-25.12]) and post-TAVI LBBB (OR 7.84 [95% CI, 2.75-24.46]) (table 1). Finally, variables were incorporated into a multivariate logistic regression model with the outcome variable of 30-day PPM implantation (figure 1). A model incorporating five factors (pre-TAVI RBBB, intra-TAVI 3rd degree AV block, intra-TAVI LBBB, use of TPW pacing and post-TAVI LBBB) demonstrated excellent discriminative ability (accuracy 0.925 and an AUC of 0.952) at predicting PPM implantation (figure 2).

Conclusions Following variable selection, the best performing model incorporated five factors including pre-TAVI RBBB, intra-TAVI AV block (3rd degree), intra-TAVI LBBB, use of

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Patient factor	Univariate OR (95% CI)	Multivariate OR (95% CI)
Age	1.04 (0.99-1.10)	0.97 (0.91-1.04)
Sex (Male)	0.87 (0.45-1.68)	1.26 (0.51-3.27)
Pre-TAVI LBBB	1.02 (0.34-2.51)	0.63 (0.15-2.22)
Pre-TAVI RBBB	5.53 (2.61-11.44)**	6.62 (1.37-36.51)*
Intra-TAVI AV block (1 st degree)	6.99 (2.26-20.03)**	2.36 (0.58-9.22)
Intra-TAVI AV block (2 nd degree)	5.29 (0.72-28.03)	5.86 (0.54-55.66)
Intra-TAVI AV block (3 rd degree)	30.69 (11.75-87.37)**	12.80 (3.44-53.34)**
Intra-TAVI LBBB	4.93 (2.17-10.68)**	4.02 (1.28-12.53)*
Use of TPW	26.16 (11.70-66.85)**	8.58 (3.19-25.12)**
Post-TAVI LBBB	3.67 (1.88-7.15)**	7.84 (2.75-24.46)**
Post-TAVI RBBB	3.14 (1.37-6.72)*	0.93 (0.17-4.56)

OR, odds ratio; CI, confidence interval. NB: age is a continuous variable, OR reflects the effect of each additional 1 year. * $p<0.05$, ** $p<0.001$