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DOES THE CORRECTED TIMI FRAME COUNT ACTUALLY REPRESENT CORONARY FLOW AND MICROVASCULAR RESISTANCE?

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Introduction Corrected Thrombolysis in myocardial infarction Frame Count (CTFC) is a key determinant of several emerging techniques aimed at estimating coronary stenosis severity, such as QFR. However, the relationship between CTFC and coronary flow or microvascular resistance (MR) has not been clearly established. This study aimed to assess the correlation between CTFC and coronary physiological indices.

Methods Simultaneous intra-coronary pressure and flow velocity were acquired using a Combwire (Philips, Volcano) in the LAD vessel of patients with angina, non-obstructive coronary artery disease (Fractional Flow Reserve (FFR) > 0.80) and preserved left ventricular systolic function. CTFC was measured by blinded observers, as the number of frames taken for contrast to reach a fixed landmark in the distal LAD. MR was calculated as distal coronary pressure/APV.

Results 64 patients were studied (80% Female, Age 57 ± 10 , 57% HTN, 23% DM, 29% Smokers) with mean ($\pm$ SD) FFR 0.92 ± 0.04 , CFR 2.37 ± 0.66 . The mean CTFC and APV were 24 frames (SD, 9; range, 10–49) and $18.64 \text{ cm}\cdot\text{s}^{-1}$ (SD, 6.11; range, 35.60–7.95), respectively. The mean MR was found to be $5.94 \text{ mmHg}\cdot\text{s}\cdot\text{cm}^{-1}$ (SD, 2.04; range, 2.62–10.85). There was a negligibly weak negative correlation between CTFC and APV ($r = 0.25$, $r^2 = 0.064$) and no correlation between CTFC and MR ($r = 0.055$, $r^2 = 0.003$). Scatter plots of CTFC against APV and MR are shown in figures 1 and 2.

Conclusion This study demonstrates that visual angiographic estimations of coronary blood flow correlate poorly with directly measured values. Currently, measurements of coronary physiology during the time of angiography require the use of intra-coronary pressure and/or flow wires. These findings may explain the discordance between stenosis severity indices based on angiographic contrast clearance rates (such as QFR) and invasively derived measures such as FFR.

Conflict of Interest None

Abstract 70 Figure 1 Relation between CTFC and APV, n 64 measurements

Abstract 70 Figure 2 Relation between CTFC and MR, n 64 measurements

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OUTCOME IN PATIENTS UNDERGOING HIGH-RISK PCI USING IMPELLA CIRCULATORY SUPPORT - 10 YEAR EXPERIENCE

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Introduction The use of Impella in the setting of high-risk percutaneous coronary intervention (PCI) has been introduced in clinical practice in the last few years in selected hospitals, giving a chance for revascularization to a sensible number of patients who are usually unsuitable for cardiac surgery due to high risks. In addition, some of these patients present pre-procedural cardiogenic shock, further increasing the rate of morbidity and mortality. Our purpose was to assess outcome of patients undergoing Impella-assisted high-risk PCI in our 10 year experience and to assess possible predictors of adverse events.

Methods From May 2008 to September 2018 patients undergoing Impella-assisted high-risk PCI were enrolled. Clinical, laboratory, echocardiographic, angiographic and procedural data were collected. Coronary artery disease burden was graded using the British Cardiovascular Intervention Society Jeopardy Score (BCIS-JS). In-hospital MACCE were recorded. During routine follow-up visits data including MACCE, hospital admissions for heart failure, Canadian Cardiovascular Society (CCS) angina grade and New York Heart Association (NYHA) functional class were recorded. Long-term survival Kaplan Meier analysis was performed according to national registry death data.

Results A total of 80 consecutive patients were enrolled (71.2 ± 13.7 years, male gender 73.8%), 21 (26.3%) presenting with stable angina, 53 (66.3%) with NSTEMI-ACS and 6 (7.5%) with STEMI. 67 (83.8%) of them showed multivessel disease, 42 (52.5%) unprotected left main disease, 47 (58.8%) severe left ventricle systolic dysfunction (LVEF < 30%), 10 (12.5%) pre-procedural cardiogenic shock. Median BCIS-JS was 10 [8.00; 12.00]. In-hospital MACCE occurred in 16 (20%) patients with death in 15 (18.8%). Median time to first follow-up visit for survivors was 105 (64.5; 282.0) days: at this time 11 (13.8%) patients had MACCE, 3 (3.8%) had hospital admissions for heart failure, median CCS was 0.00 (0.00; 0.00) and median NYHA was 1.00 (1.00; 2.00). Mean survival time (procedure to death, months) was 21 months (C.I. 14.4 - 29.0). Multivariate logistic regression analysis for possible predictors of in-hospital MACCE was performed including

the variables showing a p value <0.100 at univariate analysis, i.e. pre-procedural cardiogenic shock [OR 9.00, C.I. (2.1–37.6), p=0.003] and CK peak [OR 1.00, C.I. (1.0–1.0), p=0.051]. Pre-procedural cardiogenic shock was the only predictor [OR 7.058, C.I. (1.2–40.6), p=0.029] of in-hospital MACCE. No significant predictors of MACCE at follow-up were found at logistic regression analysis.

Conclusion In our 10 year experience of Impella-assisted high-risk PCI, 20% patients had in-hospital MACCE and mean survival was 21 months. At follow up, MACCE rate was less than 4% and both angina and heart failure symptoms were well controlled. Pre-procedural cardiogenic shock was the only predictor of in-hospital MACCE.

Conflict of Interest No conflict of interest

72 OUT-OF-HOSPITAL CARDIAC ARREST SURVIVORS UNDERGOING EMERGENCY PCI HAVE AN EXCELLENT NEUROLOGICAL RECOVERY

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Introduction Out-of-hospital cardiac arrest (OHCA) is associated with a low survival to discharge rate. We aimed to

evaluate the outcome of early Percutaneous Coronary Intervention (PCI) on the mortality rates of patients with OHCA and their neurological recovery post-intervention.

Methods Outcomes of all patients presenting to our centre with OHCA who received PCI over a 3-year period were analysed (January 2015 - December 2017). Univariate analysis was performed.

Results 65 patients were identified (80% Males, Mean age 59.9 ± 14.2 years). Chest compressions were undertaken in 60.0% of patients. The most common rhythm identified was Ventricular Fibrillation (86.2%), followed by PEA (9.2%), Ventricular Tachycardia (4.6%) and Asystole (4.6%). The mean time for patients to arrive at the cardiac centre was 51.4 ± 20.7 minutes. Post-arrest ECG revealed ST-elevation (STEMI) in 53 (81.5%) patients. 42 (64.4%) received ventilation pre-angiography and 45 (69.2%) were transferred to Intensive Care Unit (ITU) post-angiography. 18 (27.7%) were in cardiogenic shock. There was no statistical significance in the mortality rates between patients with STEMI and non-STEMI (53 vs 12; p=0.43), see Table 1. 54 patients (83.1%) survived to discharge, 30-day survival 53(81.6%), 6-month survival 53 (81.6%). 31 ventilated patients (73.8%) survived to discharge, 30-days and 6-months whereas all (100%) non-ventilated patients (n=23) survived to discharge and 30-days and 22 survived (95.7%) at 6-months (73.8 vs 100%; p=0.04). 12 patients in shock (66.7%) survived to discharge, 30-days and 6-months whereas 42 non-shocked patients (89.4%) survived to discharge, 30-days and 6-months (66.7 vs 89.4%, p=0.06).

Abstract 72 Table 1

Baseline Characteristics of Out-of-Hospital Cardiac Arrests (OHCA) patients undergoing Percutaneous Coronary Intervention at Queen Elizabeth Hospital, Birmingham. n=number of patients.	
Characteristics	OHCA undergoing PCI
Average age (years)	59.9 ± 14.2
Male, n (%)	52 (80%)
Initial rhythm, n (%)	VF= 53 (81.6) PEA= 6 (9.2) VT= 3 (4.6) Asystole= 3 (4.6)
Bystander chest compression, n (%)	39 (60)
Post-arrest ECG	STEMI= 53 (81.5) NSTEMI= 12 (18.5)
Ventilation, n (%)	42 (64.4)
Cardiogenic shock (%)	18 (27.7)
pH	7.21 ± 0.18
Lactate	6.29 ± 5.26
Outcome of OHCA patient's post-emergency PCI at Queen Elizabeth Hospital, Birmingham. n=number of patients	
Characteristics	Outcome post-emergency PCI
ITU, n (%)	45 (69.2)
Cooling catheter, n (%)	33 (73.3)
Average hospital stay (days)	ITU= 21 Non-ITU= 8
Withdrawal of life sustaining treatment <72hours, n (%)	4 (36.0)
Cerebral Performance Category (CPC) score, n (%)	1= 48 (73.8) 2= 3 (4.6) 3= 2 (3.1) 4= 1 (1.5) 5= 11 (16.9)