early stent thrombosis was observed in Group A. The 30-day death rate was 6% with 2.6% in Group A.

**Conclusions** Use of bivalirudin and prasugrel in the acute treatment of STEMI demonstrates excellent efficacy and safety. The Horizons-AMI data suggested a risk of early stent thrombosis in the absence of heparin, however, our heparin-naive cohort were free of this complication. Furthermore, our combined strategy of anti-thrombotic therapy and preferred radial access maintains very low access-site complication rates. Randomised trial data confirming this strategy is awaited.

**133** CORONARY WAVE INTENSITY: A NOVEL INVASIVE TOOL FOR PREDICTING MYOCARDIAL VIABILITY FOLLOWING ACUTE CORONARY SYNDROMES

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**Introduction** Wave intensity analysis (WIA) uses simultaneous changes in intracoronary pressure and flow to characterise energy transfer within the coronary circulation. In normal hearts, flow is predominantly driven by a microcirculatory-derived, diastolic phase, backward expansion wave (BEW) and aortic-derived, systolic phase, forward compression wave (FCW) (Abstract 133 figure 1A). Regional changes in contraction and microvascular function following acute coronary syndromes (ACS) may affect these waves, but the utility of WIA in this setting remains unknown.

**Methods** Patients were included 2–7 days after presenting with Non-ST elevation myocardial infarction (NSTEMI). Those with prior MI, haemodynamic instability or coronary artery disease unsuitable for PCI were excluded. Left ventricular ejection fraction (LVEF) and late-gadolinium enhancement (LGE) were assessed by cardiac MRI. Subsequently, intra-coronary (IC) pressure and Doppler measurements were taken in the infarct-related artery (IRA) and a remote reference vessel (REF), during IC adenosine-induced hyperaemia. Blinded WIA was performed offline. Regional left ventricular recovery following percutaneous coronary intervention (PCI) was quantitatively assessed by MRI, at 3 months (Abstract 133 figure 1B). Pearson Regression analysis was performed to assess the statistical relationship between WIA and size of infarction and recovery in function, following PCI.

**Results** 18 patients (57±11 yrs) 88±51 h post-myocardial infarction were enrolled. 12-h Troponin T, LVEF and % left ventricular infarct (LGE) mass were 1.53±1.40 μg/l, 56%±11.1% and 8.9%±6.0% respectively. BEW and FCW energies predominated with the mean peak WI being −3.17 and +2.80 (W/m² s² x 10⁵) respectively. IRA BEW energy strongly correlated with regional left ventricular recovery (R²=0.53, p=0.005) and was inversely correlated to infarct mass (R²=0.63, p<0.0001) (Abstract 133 figure 1C). REF BEW correlated weakly with LGE (R²=0.34, p=0.03).

**Conclusion** The microcirculatory backward expansion wave energy correlates with the magnitude and location of infarction and is
predictive of recovery in function following acute coronary syndromes. Therefore, coronary wave intensity analysis may be a useful adjunctive tool during cardiac catheterisation in the assessment of viability following ACS.

**Background** Patients with acute coronary syndrome and unobstructed coronary arteries represent a clinical dilemma in whom clinical management is uncertain. Cardiovascular magnetic resonance (CMR) has the potential to non-invasively identify the presence of myocardial infarction or acute myocarditis, thus establishing a final diagnosis with management implications.

**Aim** To assess the diagnostic value of CMR in patients presenting with ACS and unobstructed coronary arteries.

**Methods** From October 2010 to November 2011, 48 patients who presented with troponin positive ACS and unobstructed coronary arteries were consecutively recruited. A comprehensive CMR protocol, including T2 weighted STIR imaging for oedema and late gadolinium enhancement imaging for myocardial scarring, was performed within 4 weeks of the index event.

**Results** In 75% of cases, a cause for the troponin rise was found. Based on the oedema and scarring patterns observed, the most common diagnoses were acute myocarditis (Abstract 134 figure 1) in 40% of cases and acute myocardial infarction with spontaneous coronary recanalisation/embolus (Abstract 134 figure 2) in 19% of the cases. In six patients (12%) a diagnosis of cardiomyopathy was established: dilated cardiomyopathy (n=3), hypertrophic cardiomyopathy (n=1) and Takotsubo cardiomyopathy (n=2). Acute pericarditis was present in two patients (4%). The remaining 25% of patients had a normal CMR scan.

**Conclusion** In the setting of acute coronary syndromes with unobstructed coronary arteries CMR was able to establish a final diagnosis in 75% of patients, identifying acute myocarditis, myocardial infarction with spontaneous recanalisation/embolus, and cardiomyopathies. Establishing a final diagnosis has an important impact in patient management and secondary prevention.