RELIABILITY AND SAFETY OF MEASURING FRACTION FLOW RESERVE (FFR) AND INDEX OF MYOCARDIAL RESISTANCE (IMR) WITH A SODIUM NITROPRUSSIDE BOLUS IN ACS PATIENTS.

Poster Contributions
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**Background:** FFR is the gold standard method of measuring stenosis-specific ischaemia and guiding revascularisation. Furthermore IMR measurement has prognostic predictive value in post STEMI patients. Both techniques are based on the presence of maximal hyperaemia, if not present there can be an underestimate of stenosis severity. Hyperaemia is commonly achieved using an infusion of adenosine (140µg/kg/min); side effects, difficulty in administration and the arrival of iFR have all challenged its use. We prospectively assessed the use of a single intra-coronary bolus dose of Sodium Nitroprusside (SNP 150µg) as an alternative approach to attaining maximal hyperaemia.

**Methods:** 15 patients had FFR measurements to index lesions following an NSTEMI with Certus Pressure Wire (St Jude Medical). FFR, IMR and Pa were recorded at rest and at six 30 second intervals post SNP bolus. A further 15 patients (post NSTEMI) had index lesions assessed using an IV infusion of adenosine at standard doses.

**Results:** Resting Pd/Pa was 0.78 (SEM 0.05). Following SNP bolus a nadir of FFR was seen at 30 seconds mean 0.68 (SEM 0.047), this was reflected in the IMR values with resting IMR of 49.6 units (SEM 6.6) reducing to their lowest values at 30 secs 21.2 U (SEM 3.1). The IMR returned to a baseline value (or above) by 120 secs. Mean aortic pressure (Pa) showed a significant reduction following SNP bolus of 23.9mmHg (p<0.0001:CI 17.27-30.57), this recovered briskly to within 10% of resting value by 90 secs. Comparing SNP values to the adenosine group there was no significant difference between mean (minimal) IMR values (SNP: 21.2 U SEM 3.1, Aden: 22.44 U SEM 3.1). Following SNP bolus no complications were seen and no symptoms were reported by the patients.

**Conclusion:** A single intra-coronary bolus of 150µg SNP allows rapid and reproducible measurement of FFR and IMR with no patient discomfort or side effects. However, maximal hyperaemia returns to baseline by 120secs so the window of FFR measurement is short when using this agent and its use in FFR pullback is limited.