Abstract 018 Table 1

Variable	Mean (SD) Baseline	Mean (SD) Day 3	Mean (SD) Follow-up	Change (95% CI), p Day 3-Baseline	Change (95% CI), p Follow-up-Baseline
LVEF %	72.7 (4.7)	71.6 (4.2)	70.1 (5.2)	−1.1 (−2.440 to 0.16) p=0.09	−2.6 (−3.97 to −1.36) p=0.0002
LV Mass g/m^2	105.6 (12.3)	109.1 (12.9)	104.2 (13.8)	3.5 (1.98 to 4.55), p=0.00004	−1.4 (−3.03 to −1.02), p=0.31
RVEF %	67.9 (5.4)	67.5 (5.8)	66.5 (5.3)	−0.4 (−1.71 to 0.85) p=0.5	−1.4 (−2.41 to −0.43) p=0.006
ERGE	2.36 (0.8)	2.74 (1.1)	NA	0.37 (0.13 to 0.62) p=0.003	NA
STIR	63.3 (19.8)	67.1 (20.0)	NA	3.8 (−0.35 to 8.02) p=0.07	NA

cancer, Herceptin use increases this risk. Susceptibility is highly idiosyncratic. Although detection of cardiomyocyte injury using endomyocardial biopsy is the gold standard, it is not appropriate for routine monitoring. Serial measurements of LV ejection fraction (LVEF) only detect cardiotoxicity after significant damage has been incurred. Cardiovascular magnetic resonance (CMR) can detect myocardial inflammation and oedema using STIR (Short TI Inversion Recovery) and early gadolinium relative enhancement (EGRE). We hypothesised these CMR sequences could be used as non-invasive tests to assess acute injury and predict cAC.

Methods Patients receiving adjuvant chemotherapy for early breast cancer, were scanned before and 3 days after their first cycle of epirubicin. Follow-up CMR was performed >1 year after the final dose of anthracycline, or >3 months after the end of Herceptin. Cine imaging was used to measure LVEF; STIR and EGRE images were obtained to assess cardiac inflammation.

Results 51 patients completed the protocol. Changes in CMR parameters are outlined in the Abstract 018 table 1 below. In patients with a ¡Ý5% decrease in LVEF (n=22) at follow-up, the day 3 mean EGRE increased by 32% (p=0.002) and mean STIR SI increased by 15% (p=0.003). In the remaining patients (n=29) there were no significant changes in EGRE or STIR.

Conclusions/Implications This study has shown that subclinical myocarditis occurring after the first exposure to anthracycline can be detected using CMR and is associated with late falls in LVEF. Thus potentially identifying those at increased risk of premature heart failure, before the majority of damage is caused. Recognition of this susceptibility could inform treatment decisions and/or identify those requiring greater cardiac surveillance.

019 DEVELOPMENT AND VALIDATION OF A NOVEL PRESSURE-ONLY INTRA-CORONARY INDEX OF CORONARY STENOSIS SEVERITY

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Background Assessment of stenosis severity with fractional flow reserve (FFR) requires that coronary resistance is stable and minimised. This is usually achieved by administration of pharmacological agents such as adenosine, which adds to the cost of the procedure and cannot be administered to all patients. In this study we determine (1) if there is a time when resistance is naturally minimised at rest and (2) assess the diagnostic efficiency, compared to FFR, of a new pressure-derived adenosine-free index of stenosis severity over that time.

Methods 157 stenoses were assessed. In part 1 (39 stenoses), intracoronary pressure and flow-velocity were measured distal to the stenosis; in part 2 (118 stenoses), intracoronary pressure alone was measured. Measurements were made at baseline and under pharmacological vasodilatation with adenosine.

Results Wave intensity analysis identified a wave-free period where intracoronary resistance at rest is similar in variability and magnitude (coefficient of variation: 0.08±0.06 and 284±147 mm Hg.s/m) to those during FFR (coefficient of variation: 0.08±0.06 and 302±315 mm Hg.s/m, p=NS for both). The resting distal to proximal pressure ratio during this period, the instantaneous wave-Free Ratio (iFR), correlated closely with FFR (r=0.9, p<0.001) with excellent diagnostic efficiency (receiver operating characteristic area under curve of 93%, at FFR<0.8), specificity, sensitivity, negative and positive predictive values of 91%, 85%, 85% and 91%, respectively.

Conclusion Intra-coronary resistance is naturally constant and minimised during a diastolic wave-free period. The instantaneous wave-Free Ratio calculated over this period produces a drug-free index of stenosis severity comparable to FFR. Adoption of instantaneous wave-Free Ratio would enable the benefits of physiologically guided angioplasty to be applicable to a larger patient population.

020 COMPARISON OF FRACTIONAL FLOW RESERVE MEASUREMENTS OBTAINED USING CENTRAL VS DISTAL PERIPHERAL INTRAVENOUS ADENOSINE INFUSION TO INDUCE HYPERAEMIA

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Introduction Measurement of fractional flow reserve (FFR) permits physiological evaluation of coronary lesions. Maximal hyperaemia is required and adenosine is most often used for this. The gold standard method is continuous adenosine infusion via a large central (usually femoral) vein. Use of radial access for coronary angiography is now used in over 50% of cases performed in the UK. Hence it is desirable to have an alternative route for adenosine delivery. Peripheral venous access is frequently obtained in the hand, since veins are often most readily accessible here. However concerns exist as to whether delivery from this site would achieve adequate vasodilatation. Our aim was to address this question.

Methods Ethical approval and informed consent was obtained. Subjects were selected from patients attending for coronary angiography who were deemed to need a pressure wire to assess an intermediate coronary stenosis. Subjects received intravenous adenosine infusion sequentially by two routes: first, via a 20G hand cannula, and then, after a washout period, via a 6F femoral venous sheath. Adenosine was administered at 140 μg/kg/min for each site. Data interpretation was performed in a blinded manner. Baseline values of FFR were recorded, as was the minimal FFR achieved with adenosine infusion, from each infusion site. Time to peak hyperaemia was also recorded separately for each infusion site.

Results 37 coronary artery lesions were evaluated in 23 patients. For the overall group, FFR using hand vein adenosine infusion was 0.86±0.09; FFR using femoral vein adenosine infusion was 0.85±0.09. Individual paired comparisons of FFR readings using the different routes of adenosine administration are shown in Abstract 020