Coffee consumption habits were self-reported at the time of imaging and those who drink >25 cups/day were excluded. Coffee consumption was categorised into 3 groups (≤ 1 , 1–3, >3 cups/day) with the lowest group used as the reference in the analyses.

AoD was derived using an automated method to obtain the maximum and minimum luminal areas in the ascending (AA) and descending aorta (DA) from cine CMR images. ASI was calculated by dividing the participant's height by the time interval between the peaks of the waveform recorded. AoD and ASI outliers (1.5x inter-quartile range rule) were excluded. Log transformation of AoD values was performed prior to regression analyses.

Associations between coffee consumption and stiffness measures were assessed separately using univariate linear regression models adjusting for age, sex, ethnicity, Townsend deprivation index, current smoking, higher levels of education, height, weight, regular alcohol consumption (3 times/week), systolic blood pressure, resting heart rate, presence of hypertension, hypercholesterolaemia or diabetes, intake of vegetable, meat, water and tea consumption.

Results Baseline characteristics of the 8,412 participants included in the final analyses are summarised in table 1. Moderate and heavy coffee drinkers were more likely to be male, smoke and consumed alcohol regularly. No significant differences were observed in the systolic blood pressures and heart rates between the groups.

The unadjusted distributions of AoD in AA and DA were similar across the 3 groups (figure 1). Our regression models found no statistically significant differences in all three arterial stiffness measures for individuals who drink 1–3 cups or >3 cups of coffee/day compared with the reference group (table 2).

Conclusion In this large middle-aged cohort without cardiovascular disease, moderate to heavy coffee consumption was not associated with significant changes in arterial stiffness measured by AoD and ASI compared with individuals who drink ≤ 1 cups of coffee/day.

Conflict of Interest None

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A SIMPLE METHOD TO IMPROVE THE RELIABILITY OF ECHOCARDIOGRAPHY IN PATIENTS WITH ATRIAL FIBRILLATION

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10.1136/heartjnl-2019-BCS.10

Introduction Echocardiography plays an essential role in the management of atrial fibrillation (AF) and the diagnosis of heart failure in these patients. Assessment of systolic and diastolic function is challenging in AF due to the irregular RR interval, resulting in variability from beat to beat. We compared the reproducibility of an index beat (figure 1) approach (similar RR intervals for the two prior beats before measurement) versus conventional averaging of three, five and ten consecutive beats in patients with permanent AF.

Methods Consecutive patients were evaluated with a Philips EPIC 7 and X5-1 transducer, and all measurements were analysed offline by an operator blinded to clinical details. A minimum of 30-beat loops were obtained of the apical 2, 3 and 4-chamber, lateral and septal e' and mitral E Vmax. Global longitudinal strain (GLS), Simpson's biplane ejection fraction (EF) and E/e' were calculated and the coefficient of variation determined between 3x index beats, averaged 3 beats, averaged 5 beats and averaged 10 beats. Intra- and inter-observer variability of GLS and E/e' were assessed in 30 and 10 patients respectively, using Bland and Altman analysis.

Results 50 patients with permanent AF and symptoms of heart failure were included, with 46% women and mean age 78 ± 9 years, heart rate 97 ± 19 bpm, NTpro-BNP 1173 ± 647 ng/L, NYHA class 2.5 ± 0.6 and BMI 30 ± 6 kg/m². The index beat method had the lowest coefficient of variation (figure 1) for biplane ejection fraction, GLS and E/e' (4.5%, 8.5% and 7.3%), when compared with the average of 3 beats (11.6%, 17.9% and 14.9%), average of 5 beats (11.9%, 17.9% and 14.9%) and average of 10 beats (12.3%, 18.5% and 16.2%). GLS intra and inter-observer variability were lowest for the

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index beat, with small bias and narrow limits of agreement [in brackets]: intra -1.1 [-4.9 to 2.7] and inter -0.7 [-5.4 to 3.9]; verses 3 averaged beats -1.1 [-5.4 to 3.1] and -2 [-6.5 to 4.7]; 5 averaged beats -1.1 [-5.6 to 3.4] and -1.2 [-6.6 to 4.2]; and 10 averaged beats -1.0 [-5.0 to 3.0] and -0.9 [-6.2 to 4.3]. Inter-observer limits of agreement for E/e' were also the narrowest for the index beat method: -1.6 [-0.4 to 3.7]; verses 3 averaged beats -0.6 [-3.5 to 2.2]; 5 averaged beats -0.4 [-3.1 to 2.2]; and 10 averaged beats -0.1 [-2.5 to 2.2].

Conclusion In patients with AF, an index beat method is more reproducible than the conventional method of averaging multiple consecutive beats. This approach can enhance the reliability of measurements for both systolic and diastolic left ventricular function in patients with AF.

Conflict of Interest Nothing to declare

11 THE IMPACT OF MISCLASSIFYING LEFT VENTRICULAR SIZE IF INDEXING TO BODY SURFACE AREA IS NOT PERFORMED

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10.1136/heartjnl-2019-BCS.11

Introduction Guidelines recommend indexing measurements of left ventricle (LV) size to body surface area (BSA) to improve clinical validity. We sought to highlight the potential impact of misclassifying LV size in patients if indexing is not performed.

Methods We reviewed the reports of all trans-thoracic echocardiograms performed at a large tertiary centre for cardiology and compared proportions of patients with LV dilatation based on LV internal diastolic dimension (LVIDd) > 5.8 cm (male), >5.2 cm (female) or indexed (Dubois) LVIDd > 3.0cm/m² (male), > 3.1cm/m² (female). We also identified all reports with a diagnosis of moderate-severe or severe aortic regurgitation and compared proportions of patients with LV dilatation that would reach the threshold for surgical intervention when indexed and non-indexed values are used.

Results 20397 echocardiogram reports were reviewed. LV dilatation was present in 2821 (13.8%) based on non-indexed LVIDd compared to 2083 (10.2%) using indexed LVDD. After indexing for BSA 2202 (10.8%) patients changed category: 1470 (7.2%) patients deemed to have a dilated LV based on LVIDd were reclassified as normal, whereas 732 (3.6%) patients deemed to have a normal sized LV were reclassified as dilated when LVIDd was indexed.

Reports of 71 patients with moderate-severe or severe aortic regurgitation were reviewed. 5 (7.0%) had a LV internal systolic dimension (LVIDs) >5cm meeting criteria to consider surgery. When indexed to BSA, 15 (21.1%) had indexed LVIDs >2.5cm/m² with 11 (15.5%) changing from normal LVIDs to dilated LVIDs when indexed.

Conclusion Indexing left ventricular dimensions results in reclassification of 10.8% of patients, which could have implications on clinical management decisions. Furthermore, up to 15.5% of patients with aortic regurgitation may transition from non-dilated to dilated LVIDs when indexed values are used and so impact on timing of surgical referral. Uncorrected and BSA corrected quantitative measurements should be available on all echocardiogram reports.

Conflict of Interest None

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SEX DIFFERENCES IN THE AGREEMENT BETWEEN LEFT VENTRICULAR EJECTION FRACTION MEASURED BY MYOCARDIAL PERFUSION SCINTIGRAPHY AND BY ECHOCARDIOGRAPHY

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10.1136/heartjnl-2019-BCS.12

Background Left ventricular ejection fraction (LVEF) is generally measured by echocardiography (Echo) but is increasingly available with myocardial perfusion scintigraphy (MPS). With MPS the threshold of LVEF below which there is a risk for myocardial infarct or sudden cardiac death is higher for women (51%) than for men (43%) [Shahir T, *et al.* J Nucl Cardiol 2006;13:495–506]. We tested the hypothesis that such a sex difference may also occur with Echo and MPS, by comparing LVEF measured by both methods.

Participants and setting: A total of 1141 patients underwent cardiac assessment, including resting LVEF measured both by MPS and Echo. Of these 743 patients (404 men, mean age=67.7±SD=12.3 yr; 339 women, 67.7±11.7 yr) had separate examinations within 6months and their data used for analysis. A subset of 327 of these patients (181 men, 68.8±12.1 yr; 146 women, 66.4±12.1 yr) had examinations at a shorter time apart (within 1month) and were additionally analysed as this sub-group. All examinations were at Ashford & St Peter's NHS Foundation Trust between 30–11–2012 and 30–05–2017 (figure 1).

Methods The rest MPS was performed with the injection of 99mTc-tetrofosmin (600–1000MBq). Images were obtained using dual-head SPECT cameras (Siemens Symbia S, Erlangen, Germany) and LVEF was determined from gated images. The rest Echo was performed with a high-end 2-dimensional echocardiographic unit (Sonos 5500, Andover, Mass., US or Vingmed System V, Horten, Norway) and images were acquired with standard parasternal, short-axis and apical views and LVEF was calculated by the modified Simpson's biplane disks method. Agreement between MPS and Echo (neither considered as a reference method) was assessed by Bland-Altman plots: LVEF difference (MPS minus Echo) against average LVEF ((MPS+Echo)/2). Data are presented as means and ±SD.

Results Of patients who had MPS and Echo examinations within 6months, mean LVEF difference was +1.1% (95% limits

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