

MEETING REPORT

Report from the Annual Conference of the British Society of Echocardiography, October 2018, ACC Liverpool, Liverpool

**V Sharma MB ChB MD FRCP (Edin) FESC FBSE¹, L Al Saikhan MSc^{2,3}, C Park PhD²,
 A Hughes MB BS PhD FBPhS FBIHS², H Gu PhD⁴, S Saeed PhD⁵, A Boguslavskiy PhD⁴,
 G Carr-White PhD^{4,6}, J Chambers MD⁶ and P Chowienczyk BSc⁴, M Jain⁷, H Jessop⁷,
 C Turner MSc^{7,8}, G Bassindale-Maguire⁷, W Baig⁷, A Kidambi⁷, S T Abdel-Rahman⁷,
 D Schlosshan⁷, A Sengupta⁸, A Fitzpatrick MSc⁸, J Sandoval MA⁸, S Hickman⁸,
 H Procter⁸, J Taylor⁸, H Kaur⁸, C Knowles BSc⁸, S Wheatcroft⁸, K Witte⁸, K Gatenby⁸,
 J A Willis PhD⁹, A Kendler-Rhodes MB ChB⁹, O Slegg BSc⁹, K Carson MD FRCP⁹,
 J Easaw MD FCP FESC⁹, S R Kandan MBChB MRCP⁹, J C L Rodrigues BSc MBChB MRCP
 FRCP FSCMR PhD⁹, R MacKenzie-Ross MB BChir⁹, T Hall MBBS MRCP FRCP⁹,
 G Robinson FRCP⁹, D Little MBChB FRCP⁹, B Hudson MBBS FRCP⁹, J Pauling⁹,
 S Redman⁹, R Graham⁹, G Coghlan¹⁰, J Suntharalingam BSc FRCP MD^{9,11} and
 D X Augustine BSc MBBS MSc MD FHEA FRCP⁹, J W M Nowak MSc⁹ and
 A T Masters MSc¹²**

¹Liverpool University Hospitals NHS Foundation Trust, Liverpool, UK

²MRC Unit for Lifelong Health and Aging at UCL, Department of Population Science & Experimental Medicine, UCL Institute of Cardiovascular Science, University College London, London, UK

³Department of Cardiac Technology, College of Applied Medical Sciences, Imam Abdulrahman Bin Faisal University, Dammam, Saudi Arabia

⁴British Heart Foundation Centre, King's College London, London, UK

⁵Haukeland University Hospital, Bergen, Norway

⁶Cardiothoracic Centre, St Thomas' Hospital, London, UK

⁷Yorkshire Heart Centre, Leeds General Infirmary, Leeds, UK

⁸Department of Cardiology, Leeds General Infirmary, Leeds Teaching Hospitals NHS Trust, Leeds, UK

⁹Royal United Hospitals Bath, NHS Foundation Trust, Bath, UK

¹⁰Department of Cardiology, Royal Free Hospital, London, UK

¹¹University of Bath, Bath, UK

¹²University Hospitals Bristol NHS Foundation Trust, Bristol, UK

Correspondence should be addressed to V Sharma: vishalsharma76@gmail.com

MEETING REPORT

Foreword

V Sharma MB ChB MD FRCP (Edin) FESC FBSE

Liverpool University Hospitals NHS Foundation Trust, Liverpool, UK

Correspondence should be addressed to V Sharma: vishalsharma76@gmail.com

The 2018 annual conference was held on the 5 and 6 October 2018 at the ACC Liverpool. This was a hugely successful event with 825 delegates attending over the weekend. The conference coincided with the giant Royal De Luxe street puppets, known locally as ‘the Giants’, returning to the city. This offered a unique opportunity for delegates to experience this spectacular street festival, even if ‘the Giants’ brought with them some logistical difficulties!

There was a huge amount of educational content spread over the 2 days with three parallel sessions, including our dedicated Scientific Training Programme day. For the keynote BSE invited lecture, we were delighted to welcome Professor Jens-Uwe Voigt who gave an excellent talk on the ‘Current use of deformation imaging in clinical practice’. We were also honoured to welcome the Past-President of the European Society of Cardiovascular Imaging, Professor Gilbert Habib who delivered the BSE international lecture on ‘Endocarditis – from prevention to treatment’.

There was no overall theme for the conference this year but in response to previous years’ member feedback, we organised a variety of sessions covering the most popular topics. One of the most frequent requests we received was for sessions to have a more practical focus. We, therefore, arranged sessions specifically on ‘how to’ assess valve disease and ‘how to’ undertake stress echo. In these sessions, a variety of experts outlined a systematic approach of how to get the most out of an echocardiographic study as well as sharing their practical tips. There was also a dedicated session on the right heart including excellent talks by Dr Daniel Knight and Dr Abbas Zaidi who are the lead authors on the recently completed BSE guidelines on right heart assessment (1). Dr Dan Augustine also launched the new BSE guidelines on the assessment of pulmonary hypertension which have been published in *Echo Research and Practice* (2).

In addition to the keynote lecture from Professor Voigt, there was a dedicated session on the use of deformation imaging including excellent talks from Dr David Oxborough, Dr Grant Heatlie and the Education Committee Vice Chair, Dr Martin Stout. We were also delighted with the high-quality research that is being undertaken in the United Kingdom with a number of excellent presentations and posters showcased during the conference. We have included a summary of the abstracts in this supplement.

We launched the BSE Fellowship programme at the 2018 Annual Conference. Fellowship of the British Society of Echocardiography (FBSE) provides recognition of the members high standing in the field of echocardiography. As part of this process, previous Past Presidents and Vice-Presidents of the British Society of Echocardiography were awarded Honorary Fellowships during the conference. It was certainly a pleasure to see so many of those that have done so much both for the BSE and echocardiography receive their Fellowships at the social event.

The conference closed with an interactive panel debate consisting of BSE Presidents, Prof John Chambers, Dr Guy Lloyd, Dr Rick Steeds, Mr Keith Pearce and Education Committee Vice-Chair Dr Martin Stout and myself. This proved a popular session and a number of challenging cases were discussed with some important learning points highlighted by the presenters and panel members.

Finally, I must convey our gratitude to our exhibitors and sponsors; without whom it would not be possible to deliver the annual conference. In particular, we are grateful to our platinum sponsors, Siemens, Philips and GE for their continued support of the BSE.

Declaration of interest

The author declares that there is no conflict of interest that could be perceived as prejudicing the impartiality of this meeting.

Funding

This work did not receive any specific grant from any funding agency in the public, commercial or not-for-profit sector.

References

- 1 Zaidi A, Knight DS, Augustine DX, Harkness A, Oxborough D, Pearce K, Ring L, Robinson S, Stout M, Willis J, *et al.*

Echocardiographic assessment of the right heart in adults: a practical guideline from the British Society of Echocardiography. *Echo Research and Practice* 2020 **7** G19–G41. (<https://doi.org/10.1530/ERP-19-0051>)

- 2 Augustine DX, Coates-Bradshaw LD, Willis J, Harkness A, Ring L, Grapsa J, Coghlan G, Kaye N, Oxborough D, Robinson S, *et al.* Echocardiographic assessment of pulmonary hypertension: a guideline protocol from the British Society of Echocardiography. *Echo Research and Practice* 2018 **6** G11–G24. (<https://doi.org/10.1530/ERP-17-0071>)

Received in final form 2 September 2020

Accepted 2 September 2020

Accepted Manuscript published online 9 September 2020

MEETING REPORT

Abstract 1: Quantifying the effect of image quality on three-dimensional speckle tracking echocardiography

L Al Saikhan MSc^{1,2}, C Park PhD¹ and A Hughes MB BS PhD FBPhS FBIHS¹

¹MRC Unit for Lifelong Health and Aging at UCL, Department of Population Science & Experimental Medicine, UCL Institute of Cardiovascular Science, University College London, London, UK

²Department of Cardiac Technology, College of Applied Medical Sciences, Imam Abdulrahman Bin Faisal University, Dammam, Saudi Arabia

Background

Three-dimensional speckle-tracking echocardiography (3D-STE) is believed to be influenced by the image quality, although quantitative evidence on this is limited. A previous evaluation indicated that sub-optimal image quality introduces a systematic bias in 3D-STE derived left ventricular (LV) deformation indices (1, 2). Therefore, we aimed to quantify the extent of bias in proportion to impairment in image quality.

Methods

This was a prospective experimental study. Eighteen healthy participants (age 31 ± 6 years, 83.3% men) with good echocardiographic windows underwent 3D echocardiography (3DE). To impair the quality of the 3DE images of the LV in a reproducible and graded manner, a sheet of ultrasound-attenuating material, neoprene rubber, of three different thicknesses (2, 3 and 4 mm) was used to mimic mild, moderate and severe impairment in image quality, respectively. Four gated LV 3DE full-volume datasets (including the optimal quality reference) were acquired per participant. All acquisitions were free of stitching artefacts and similar frame rates were maintained throughout. LV volumetric, and global and

segmental LV deformation indices were measured. Mixed linear modelling was used to estimate the extent of bias.

Results

There was a systematic bias in all global and segmental LV strains, and LV rotational indices. The extent of this systematic underestimation was in proportion to the impairment in image quality of the 3D images (i.e. the poorer the image quality, the larger the bias) (Table 1). Volumetric measures, including LV ejection fraction and LV systolic dyssynchrony index, were also increasingly underestimated relative to the grade of impairment in image quality (Table 1).

Conclusions

The systematic bias introduced by sub-optimal image quality on 3D-STE derived LV deformation indices is in proportion to and directly linked to the grade of impairment in image quality. Image quality should be assessed and accounted for in 3D-STE studies.

Table 1 The extent of bias in proportion to impairment in image quality on LV deformation indices measured by three-dimensional speckle-tracking echocardiography.

	Extent of bias relative to the reference							
	Mild	Moderate	Severe	P (trend)	Reference	Mild	Moderate	Severe
Global LV deformation indices								
GCS, %	1.6 (0.89, 2.4)	1.8 (0.99, 2.5)	2.6 (1.9, 3.4)	<0.0001	-26.2 (-27.0, -23.3)	-24.6 (-25.4, -23.7)	-24.4 (-25.3, -23.6)	-23.6 (-24.4, -22.7)
GLS, %	0.47 (-0.34, 1.3)	0.89 (0.08, 1.7)	2.0 (1.2, 2.8)	<0.0001	-20.8 (-21.6, -19.9)	-20.3 (-21.1, -19.5)	-19.8 (-20.7, -19.1)	-18.7 (-19.5, -17.9)
Basal rotation, °	0.14 (-1.5, 1.8)	1.9 (0.16, 3.5)	2.6 (0.90, 4.3)	0.001	-7.1 (-8.4, -5.7)	-6.9 (-8.3, -5.5)	-5.2 (-6.6, -3.8)	-4.5 (-5.8, -3.1)
Apical rotation, °	-1.1 (-2.8, 0.49)	-2.6 (-4.3, -1.0)	-3.0 (-4.7, -1.4)	<0.0001	6.7 (5.2, 8.1)	5.5 (4.1, 7.0)	4.0 (2.6, 5.5)	3.6 (2.1, 5.1)
Twist, °	-1.5 (-4.6, 1.6)	-4.7 (-7.8, -1.6)	-5.9 (-9.1, -2.8)	<0.0001	13.5 (10.9, 16.2)	12.1 (9.4, 14.7)	8.8 (6.2, 11.5)	7.6 (4.9, 10.2)
Torsion, °/cm	-0.12 (-0.45, 0.21)	-0.47 (-0.81, -0.14)	-0.63 (-0.96, -0.29)	<0.0001	1.5 (1.2, 1.7)	1.3 (1.1, 1.6)	0.99 (0.70, 1.3)	0.84 (0.55, 1.1)
Averaged* segmental LV deformation indices								
CS, %	1.4 (0.54, 2.3)	1.6 (0.69, 2.5)	2.9 (2.0, 3.8)	<0.0001	-26.0 (-26.9, -25.1)	-24.6 (-25.5, -23.7)	-24.4 (-25.3, -23.5)	-23.1 (-24.0, -22.1)
LS, %	0.60 (-0.26, 1.5)	1.1 (0.23, 1.97)	2.0 (1.1, 2.9)	<0.0001	-20.5 (-21.3, -19.7)	-19.9 (-20.7, -19.0)	-19.4 (-20.2, -18.6)	-18.5 (-19.3, -17.7)
PTS, %	1.0 (0.04, 2.0)	1.4 (0.40, 2.4)	1.8 (0.81, 2.8)	<0.0001	-31.8 (-32.6, -30.9)	-30.7 (-31.6, -29.8)	-30.4 (-31.2, -29.5)	-29.9 (-30.8, -29.0)
RS, %	-1.7 (-2.6, -0.7)	-2.2 (-3.1, -1.3)	-4.0 (-5.0, -3.1)	<0.0001	39.1 (38.1, 40.1)	37.4 (36.4, 38.4)	36.9 (35.9, 37.9)	35.1 (34.1, 36.1)
LV systolic dyssynchrony index								
SDI _{volume} , %	-0.02 (-0.6, 0.6)	-0.79 (-1.4, -0.17)	-1.1 (-1.7, -0.5)	<0.0001	4.4 (3.9, 4.9)	4.4 (3.9, 4.9)	3.6 (3.1, 4.2)	3.3 (2.8, 3.8)
Global LV volumetric indices								
EDV, mL	-7.8 (-14.5, -1.0)	-11.8 (-18.5, -5.0)	-19.5 (-26.3, -12.8)	<0.0001	139.6 (129.6, 149.5)	131.8 (121.8, 141.7)	127.8 (117.8, 137.7)	120.0 (110.0, 130.0)
ESV, mL	-1.9 (-5.1, 1.3)	-2.5 (-5.7, 0.69)	-5.1 (-8.3, -1.8)	0.002	62.5 (57.3, 67.7)	60.5 (55.3, 65.8)	59.9 (54.7, 65.2)	57.4 (52.2, 62.6)
EF, %	-1.2 (-1.9, -0.46)	-2.2 (-2.9, -1.5)	-3.2 (-3.9, -2.5)	<0.0001	55.4 (54.4, 56.4)	54.2 (53.2, 55.2)	53.1 (52.1, 54.2)	52.2 (51.2, 53.2)
SV, mL	-5.8 (-9.6, -2.1)	-9.3 (-13.0, -5.5)	-14.5 (-18.3, -10.7)	<0.0001	77.1 (72.0, 82.1)	71.2 (66.2, 76.3)	67.8 (62.8, 72.9)	62.6 (57.5, 67.6)

Data are means (95% confidence intervals).

*Averaged based on 16-segments model. The frame rate = 21.1 ± 3.0 frame/sec (reference data-sets), = 21.0 ± 3.2 frame/sec (mildly impaired data-sets), 21.0 ± 3.2 frame/sec (moderately impaired data-sets), and 20.8 ± 3.0 frame/sec (severely impaired data-sets).

CS, circumferential strain; EDV, end-diastolic volume; EF, ejection fraction; ESV, end-systolic volume; GCS, global circumferential strain; GLS, global longitudinal strain; LV, left ventricular; PTS, principle tangential strain; RS, radial strain; SDI, systolic dyssynchrony index; SV, stroke volume.



Declaration of interest

The authors declare that there is no conflict of interest that could be perceived as prejudicing the impartiality of this article.

Funding

This work did not receive any specific grant from any funding agency in the public, commercial or not-for-profit sector.

References

- 1 Al Saikhan L, Park C & Hughes A. P644 the impact of intentional distortion of image quality on left ventricular deformation indices by three-dimensional speckle-tracking echocardiography. *European Heart Journal Cardiovascular Imaging* 2019 **20** (Supplement 1) i363–i381. (<https://doi.org/10.1093/ehjci/jey265>)
- 2 Al Saikhan L, Park C & Hughes A. P645 reliability of left ventricular dyssynchrony indices by three-dimensional speckle-tracking echocardiography: the impact of intentional impairment of image quality. *European Heart Journal Cardiovascular Imaging* 2019 **20** (Supplement 1) i363–i381. (<https://doi.org/10.1093/ehjci/jey265>)

Received in final form 2 September 2020

Accepted 2 September 2020

Accepted Manuscript published online 9 September 2020

MEETING REPORT

Abstract 2: First-phase ejection fraction is a powerful predictor of adverse events in asymptomatic patients with aortic stenosis and preserved total ejection fraction

H Gu PhD¹, S Saeed PhD², A Boguslavskyi PhD¹, G Carr-White PhD^{1,3}, J Chambers MD³ and P Chowienczyk BSc¹

¹British Heart Foundation Centre, King's College London, London, UK

²Haukeland University Hospital, Bergen, Norway

³Cardiothoracic Centre, St Thomas' Hospital, London, UK

Objectives

First-phase ejection fraction (EF1), the ejection fraction up to the time of maximal ventricular contraction may be more sensitive than existing markers in detecting early systolic dysfunction. We examined the prognostic value of EF1 in patients with aortic stenosis (AS), a condition in which left ventricular dysfunction as measured by conventional indices is an indication for valve replacement.

Methods

The predictive value of EF1 compared to conventional echocardiographic indices for outcomes was assessed in 218 asymptomatic patients with at least moderate AS, including 73 with moderate, 50 with severe and 96 with 'discordant' (aortic area < 1.0 cm² and gradient < 40 mmHg) AS, all with preserved EF, followed for at least 2 years (Fig. 1). EF1 was measured retrospectively from archived echocardiographic images by wall tracking of the endocardium. The primary outcome was a combined event of aortic valve intervention, hospitalisation for cardiac causes and death from any cause.

Results

EF1 was the most powerful predictor of events in the total population and all sub-groups (Fig. 2). A cut-off value of 25% gave hazard ratios (for EF1 < 25% compared to ≥ 25%) of 27.7 (95% CI 13.1–58.7, *P* < 0.001) unadjusted and 24.4 (11.3–52.7, *P* < 0.001) adjusted for other echocardiographic measures, including global longitudinal strain, for events at 2 years in all patients with asymptomatic AS. Corresponding hazard ratios for all-cause mortality in the total population were 17.5 (5.7–53.3) and 17.4 (5.5–55.2) unadjusted and adjusted, respectively.

Conclusion

EF1 may be potentially valuable in the clinical management of patients with AS and other conditions in which there is a progression from early to late systolic dysfunction.

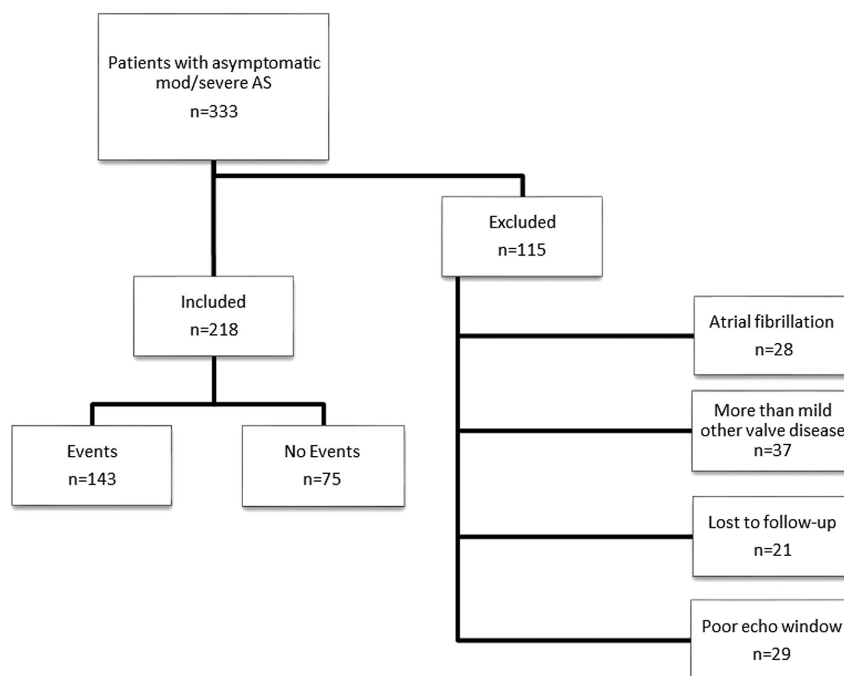


Figure 1
Study population flow chart.

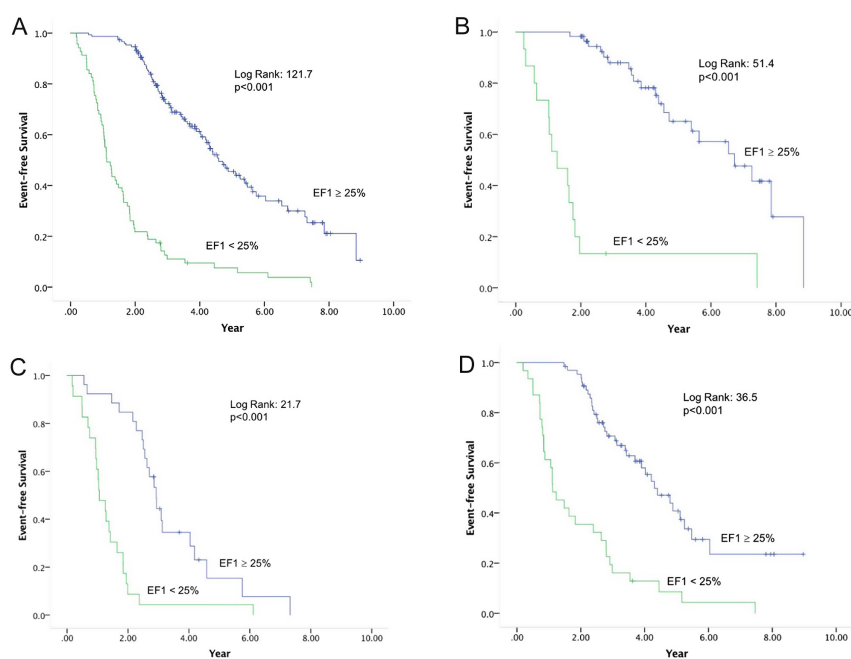


Figure 2
Kaplan–Meier event-free survival curves according to EF1 (cut off value 25%) for (A) total population (n = 218); (B) patients with moderate AS (n = 73); (C) patients with severe AS (n = 49) and (D) discordant (mean pressure gradient < 40 mmHg and aortic valve area < 1.0 cm², n = 96).

Declaration of interest

The authors declare there is no conflict of interest that could be perceived as prejudicing the impartiality of this article.

Funding

This work did not receive any specific grant from any funding agency in the public, commercial or not-for-profit sector.

Received in final form 2 September 2020
Accepted 2 September 2020
Accepted Manuscript published online 9 September 2020



MEETING REPORT

Abstract 3: Improved aortic dimension assessment with specialist echocardiography clinics: a quality improvement study

M Jain, H Jessop, C Turner MSc, G Bassindale-Maguire, W Baig, A Kidambi, S T Abdel-Rahman and D Schlosshan

Yorkshire Heart Centre, Leeds General Infirmary, Leeds, UK

Background

Aortopathy is a common clinical problem. Guidelines recommend the use of double-oblique short-axis imaging (CT/MRI) for significant aortic dilatation. Echocardiography is more readily available and cost effective. However, accuracy and reproducibility are affected by operator variability. Good correlation between imaging techniques is vital for patient management, and may reduce health care expense and ionizing radiation.

Objectives

We investigated the effect of the dedicated specialist valve/aortopathy echocardiography clinics on the accuracy of measurements and correlation with CT/MRI, compared to routine echocardiography performed outside these clinics. We hypothesized that a dedicated specialist-based clinics would yield a better correlation with CT/MRI.

Methods

Thirty patients undergoing echocardiography in a specialist clinic for aortopathy, who also had correlative imaging with CT/MRI were the retrospectively analysed. Aortic measurements were obtained using the inner edge to inner edge in the end-diastole method. Correlative imaging was compared for the aortic root (aortic annulus, sinus of valsalva, sinotubular junction) and ascending aortic measurements. A similar cohort of 25 patients outside specialist echocardiography clinic was used for comparison.

Results

Patient baseline characteristics are outlined in [Table 2](#). The difference in mean maximum aortic diameter was 2.5 (± 2.4) mm for dedicated clinics, compared to

Table 2 Baseline characteristics.

Demographics	Specialist clinic	Non-specialist clinic	P value
Age (mean, years)	54 \pm 12	57 \pm 15	0.47
Gender (male)	73%	68%	
Imaging features			
Aortic valve morphology (<i>n</i> , %)	17 (57%)	8 (32%)	
Bicuspid			
Trileaflet	8 (27%)	13 (52%)	
Prosthetic valve	3 (10%)	4 (16%)	
Quadricuspid	2 (6%)	0 (0%)	
Time between echo and correlative imaging (mean, months)	5 \pm 5	9 \pm 7	0.02
Correlative modality	22 (73%)	23 (92%)	
MRI			
CT	8 (27%)	2 (8%)	

Table 3 Results.

Aortic dimension	Specialist clinic	Non-specialist clinic	P value
Maximal dimension (mean, mm)	44.6 ± 5.4	42.0 ± 4.3	0.12
Difference in maximal dimension (mm)	2.5 ± 2.4	4.2 ± 2.8	0.03

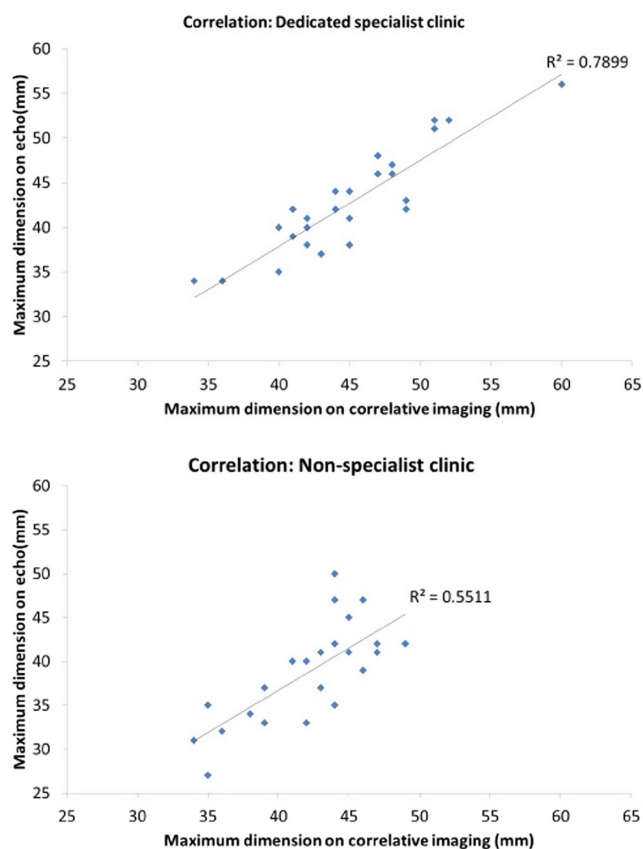


Figure 3
Correlation of maximum dimension between dedicated specialist and non-specialist clinic.

4.2 (±2.8) mm for non-dedicated lists (*P* value 0.03) (Table 3). Bicuspid valves were the most common valve type in dedicated clinics (57%), compared to normal trileaflet valves (52%) in non-dedicated clinics. There was a significant difference in time to correlative imaging between the groups (Table 2).

Conclusions

There was a significantly better correlation between echo and cross-sectional imaging when the maximum aortic dimension was measured in a dedicated valve/aortopathy clinic (Fig. 3). Potential confounders include the time difference in correlative imaging and biases from retrospective analysis. Further investigation into this approach may reduce the need for cross-sectional imaging and offer a more cost-effective surveillance of aortopathy.

Declaration of interest

The authors declare that there is no conflict of interest that could be perceived as prejudicing the impartiality of this article.

Funding

This work did not receive any specific grant from any funding agency in the public, commercial or not-for-profit sector.

Received in final form 2 September 2020

Accepted 2 September 2020

Accepted Manuscript published online 9 September 2020

MEETING REPORT

Abstract 4: Risk assessment after myocardial infarction: the role of echocardiography

A Sengupta, A Fitzpatrick MSc, J Sandoval MA, S Hickman, H Procter, J Taylor, H Kaur, C Turner MSc, C Knowles BSc, S Wheatcroft, K Witte, A Kidambi, K Gatenby and D Schlosshan

Department of Cardiology, Leeds General Infirmary, Leeds Teaching Hospitals NHS Trust, Leeds, UK

Introduction

Patients with myocardial infarction (MI) are at risk of developing left ventricular systolic dysfunction (LVSD), with implications for quality of life, driving and mortality related to heart failure and sudden death. Current UK and European guidelines recommend inpatient echocardiography after MI, to identify those with severe LVSD. This guides early secondary prevention and consideration of prophylactic implantable cardioverter-defibrillator (ICD) therapy if severe LVSD is sustained after 6 weeks.

Methods

We audited compliance with current guidance on inpatient, post-MI echocardiography in a large tertiary centre with high-volume primary angioplasty on three occasions between 2014 and 2016. We appraised the requesting of repeat echocardiography in those with severe LVSD. Following identification of suboptimal performance, we instituted wide-ranging changes to staff induction, inpatient documentation and the requesting process for echocardiography. We adjusted departmental provision to focus physiologists' workload onto this service; importantly, we designed a targeted, post-MI reporting template (Fig. 4) to gather relevant data on LV function and common complications, with the provision for a detailed outpatient study to address incidental

findings. Following these interventions, we re-evaluated performance.


Results

Inpatient echocardiography was documented in 44–58% of patients with ST-elevation MI (STEMI) and 60–61% of those suffering non-STEMI. Around 50% of patients with severe LVSD had no repeat assessment, with potential implications for device referral. After implementing the above alterations, 84% of STEMI and 94% of non-STEMI patients received inpatient echocardiography on re-audit in 2017.

Discussion

In increasingly time-pressured environments, safe and efficient measures are necessary to maintain high-level risk stratification. We demonstrate that, among other interventions, our use of targeted reporting templates was associated with more patients having inpatient echocardiography. We feel that focussing the imaging data set and nature of the report to the question allows cardiologists and physiologists to complete more scans whilst maintaining patient safety.

Focussed study

The Leeds Teaching Hospitals 
NHS Trust

Patient: NHS No.: Hospital No.: DoB: Scanned by: Reason for Referral:		Ref. Consultant: Dept/Ward: Copy To: Study Date: 02/08/2018 Rhythm: Study Quality: Patient BSA Heart Rate:	
M-Mode / 2D Measurements (mm) n: = normal range			
LEFT VENTRICLE	AORTA	RIGHT HEART	LEFT ATRIUM
IVSd: n: 6-12 IVSs: n: 9-18 LVIDd: n: M 42-59 n: F 39-53 LVIDs: n: 25-41 PWd: n: 6-12 PWS: n: 9-18	LVOT: Prox ASC AO: SoV: n: 20-37 Arch: STJ: DESC AO:	RVd: n: 9-26 PA: RVAW: RVOT: IVC: n: <15	LA: n: M 30-40 n: F 27-38 I-S: A-P:
Doppler Haemodynamics	MITRAL VALVE	PULMONARY VALVE	
AORTIC VALVE	E wave: m/s n: 0.6-1.3 A wave: m/s Mean Grad: mmHg EDT: ms A dur: ms IVRT: ms MV pt %: ms MV EVA: cm ² MR:	PA: m/s n: 0.6-1.3 PPD: m/s PR: TRICUSPID VALVE TV: m/s n: 0.3-0.7 TV Pt %: m/s TR:	
CALCULATIONS			
Est PA syst Pressure: 0 mmHg Est PA diast Pressure: mmHg	FS: % n: 25-43 SV: ml	EF: % n: >=55% EF Range:	
REPORT COMPLETE: No			
Focussed Post MI Report			
<p>LV size: LV function (LVEF): Mild (50-55%)/Mild-mod 45-50%/Moderate 40-45%/Mod-severe (35-40%)/Severe (<35%) RWMA: Post MI complication (thrombus or VSD): RV size: RV function: Valves: PASP: Pericardial effusion: Other pathology identified that needs a referral as an outpatient:</p> <p>Departmental echo advised: Yes/No</p> <p><i>Disclaimer: This is a focussed scan to assess the specific clinical query of post MI LV function. A reduced image dataset has been obtained and the report may suggest the referral for a repeat outpatient transthoracic scan to obtain a full data set to investigate a pathology further, i.e. aortic stenosis, mitral regurgitation, etc.</i></p>			
Reported by:		Signed by:	
		Date Signed:	

Figure 4
Focussed study.

Declaration of interest

The authors declare that there is no conflict of interest that could be perceived as prejudicing the impartiality of this article.

Funding

This work did not receive any specific grant from any funding agency in the public, commercial or not-for-profit sector.

Received in final form 2 September 2020

Accepted 2 September 2020

Accepted Manuscript published online 9 September 2020

MEETING REPORT

Abstract 5: BSE pulmonary hypertension guidelines: audit and future perspectives

J A Willis PhD¹, A Kendler-Rhodes MB ChB¹, O Slegg BSC¹, K Carson MD FRCP¹, J Easaw MD FCP FESC¹, S R Kandan MBChB MRCP¹, J C L Rodrigues BSc MBChB MRCP FRCR FSCMR PhD¹, R MacKenzie-Ross MB BChir¹, T Hall MBBS MRCP FRCR¹, G Robinson FRCP¹, D Little MBChB FRCP¹, B Hudson MBBS FRCP¹, J Pauling¹, S Redman¹, R Graham¹, G Coghlan², J Suntharalingam BSc FRCP MD^{1,3} and D X Augustine BSc MBBS MSc MD FHEA FRCP¹

¹Royal United Hospitals Bath, NHS Foundation Trust, Bath, UK

²Department of Cardiology, Royal Free Hospital, London, UK

³University of Bath, Bath, UK

Introduction

BSE guidelines to assess the probability of pulmonary hypertension (PH) have been recently published. We present a contemporary dataset of patients attending a regional service for the evaluation of PH. We audit BSE guidelines and highlight areas for potential development.

Methods

In total, 174 patients attending from August 2017 for PH assessment had echo and right heart catheter (RHC) data analysed from the RUH PH registry.

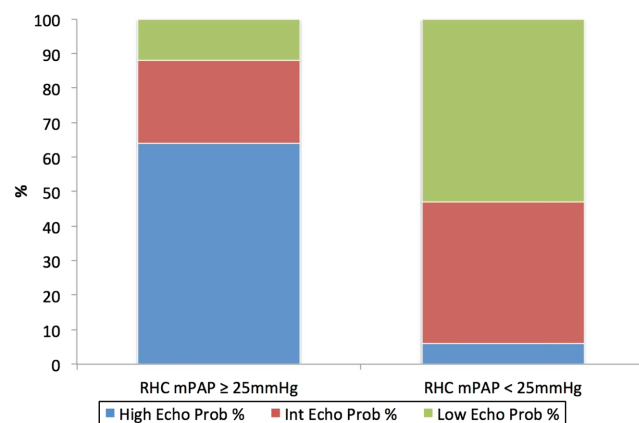


Figure 5
Percentage distribution of echo probability of PH in those with and without RHC PH.

Results

Of the 174 patients, 142 (82%) were diagnosed as having PH at RHC (mean RHC mPAP 44.4 mmHg). Of those with RHC PH ($n=142$), 92 (65%) had a high probability of PH based on echo assessment, 33 (23%) had intermediate echo probability of PH whilst 17 (12%) had a low echo

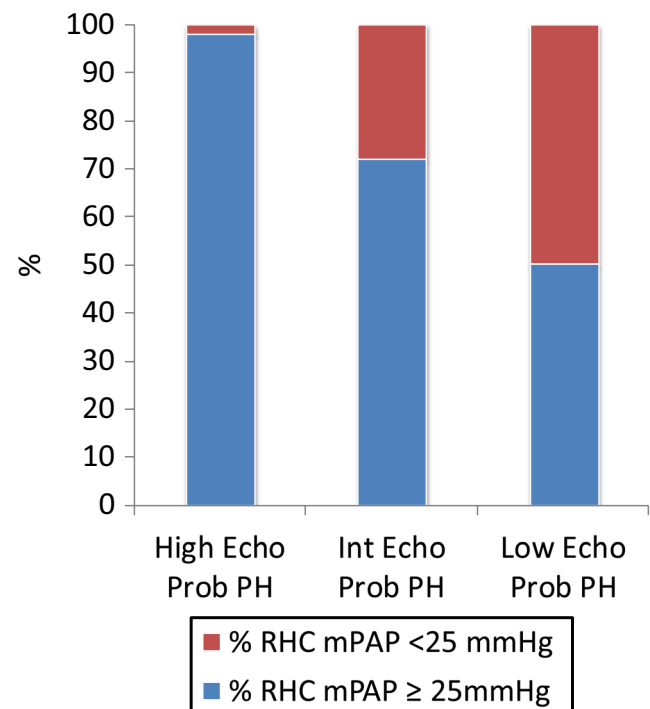


Figure 6
Echo probability of PH associated % with RHC PH.

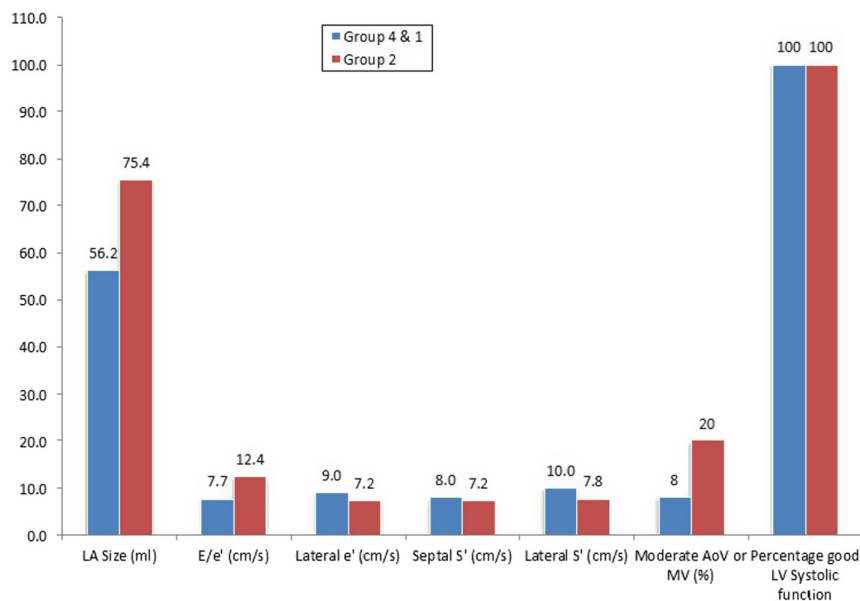


Figure 7
Assessment of left heart parameters in those with low probability of PH on echo.

probability of PH (Figs 5 and 6). Only two patients with a high echo probability of PH (2%) had no RHC PH.

Of those who had low probability of PH on echo but confirmed RHC PH (mean RHC mPAP 28 mmHg, $n=17$), aetiology in 71% was with either thromboembolic disease or connective tissue disease. The remainder (29%) had left heart disease (and this could be distinguished by left heart echo parameters, Fig. 7).

Conclusion

Ninety-eight percent of patients with high echo probability of PH had PH confirmed on RHC. Of those with confirmed RHC PH, 88% had intermediate or high echo probability of PH. The remainder had low echo probability of PH. From this low echo probability group with RHC PH, mean mPAP was mildly elevated. Twenty-nine

percent was due to left heart disease and this was evident on echo highlighting the importance of thorough LV echo assessment.

Developing disease-specific echo cut-offs, associating disease pattern/progression with echo or the evaluation of novel echo markers in patients with thromboembolic or connective tissue disease may help to reduce the likelihood of a false negative echo assessment in these groups.

Declaration of interest

The authors declare that there is no conflict of interest that could be perceived as prejudicing the impartiality of this article.

Funding

This work did not receive any specific grant from any funding agency in the public, commercial or not-for-profit sector.

Received in final form 2 September 2020

Accepted 2 September 2020

Accepted Manuscript published online 9 September 2020

MEETING REPORT

Abstract 6: The impact of echocardiographic guidelines and appropriateness criteria on valvular heart disease follow-up frequency

J W M Nowak MSc¹, J A Willis PhD¹, A T Masters MSc², S R Kandan MBChB MRCP¹, J Easaw¹ and D X Augustine MBChB MRCPBSc MBBS MSc MD FHEA FRCP¹

¹Royal United Hospital NHS Foundation Trust (RUH), Bath, UK

²University Hospitals Bristol NHS Foundation Trust, Bristol, UK

Introduction

There is increasing demand on cardiac physiology services, particularly echocardiography, in centres throughout the UK. Valvular heart disease (VHD) and its management is a significant contributor to this burden and as such it is crucial that the appropriate follow-up echocardiogram frequency is selected for these patients. This study sought to investigate the impact of the 2017 ESC/EACTS Guidelines for the management of valvular heart disease and the 2017 Appropriateness criteria for the use of cardiovascular imaging in heart valve disease in adults, adapted for local use within the department. An example is shown in Fig. 8.

Method

Current VHD echocardiogram follow-up requests due in January and February 2018 for a sample of 90 patients (37 male and 53 female, mean age 71.1 years) were compared to the new guideline recommendations. Follow-up frequency for patients with multiple valve pathologies (63.3%, $n=57$) was determined by the most serious pathology. Patients with congenital defects, left ventricular systolic dysfunction, aortic dilatation and prosthetic valve replacements or repairs were excluded to allow a cohort of patients with pure native valve disease to be assessed.

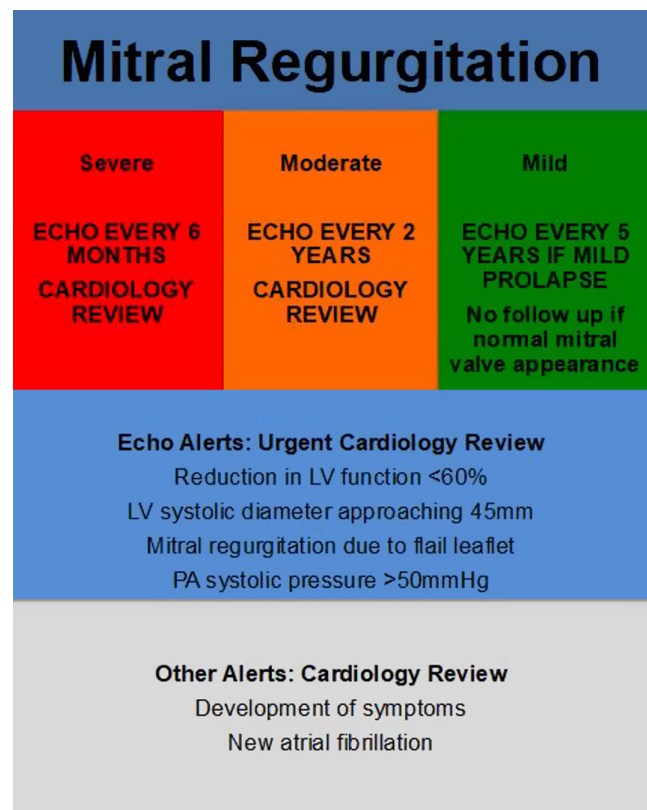


Figure 8

A sample follow-up guide for mitral regurgitation. Similar is used for other valvular pathology.

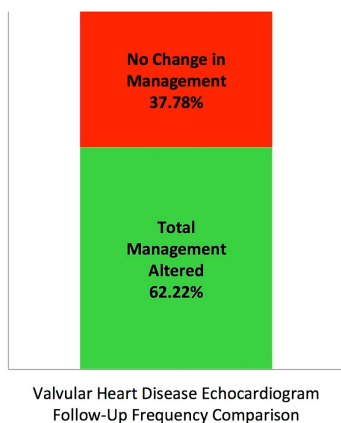


Figure 9
Change in patient management resulting from altered valve follow-up.

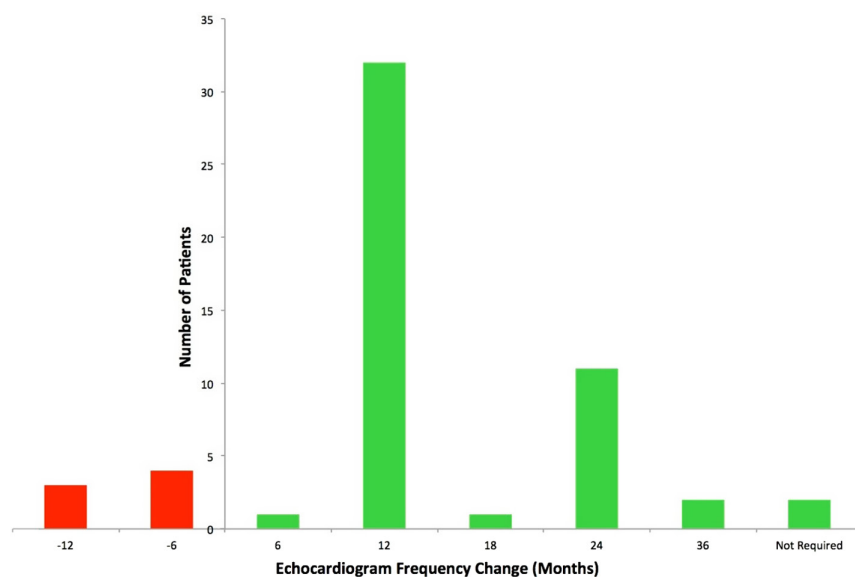


Figure 10
Change in patient follow up with either an increase (green) or reduction (red) in time to repeat valve follow up.

Results and conclusion

Of the 90 follow-up requests, patient management was altered in 62% ($n=56$) of patients (Fig. 9), whilst the time to follow up echo was increased in 54% ($n=49$) of patients (Fig. 10). This reduces the necessity for VHD follow-up appointments and the potential for repeated unnecessary echocardiograms where they are being performed too often.

Departmental standardization of VHD follow-up frequency and implementation of physiologist-led valve clinics would further stratify workflow and continuity in future.

Declaration of interest

The authors declare there is no conflict of interest that could be perceived as prejudicing the impartiality of this article.

Funding

This work did not receive any specific grant from any funding agency in the public, commercial or not-for-profit sector.

Received in final form 2 September 2020

Accepted 2 September 2020

Accepted Manuscript published online 9 September 2020