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Abstract presentations — Practical session

1.
Echocardiography for cardiomegaly: Useful or a waste of resources?

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Background: It was perceived that radiographic cardiomegaly is a frequent and increasingly requested indication for echocardiogram (echo) but provides a low yield for cardiac disease. We aimed to analyse the frequency at which this request occurs and, given the clinical details supplied, whether any abnormality exposed would change future clinical management.
Methods: From our database for echo studies, reports were extracted using the search term ''cardiomegaly''. Reports were then categorised by the presence of indicators of cardiac disease in the request: none; non-specific (e.g. ankle swelling); specific (e.g. abnormal ECG), then further classified by whether the echo findings were clinically relevant. In order to reduce subjectivity, analysis was undertaken independently by three specialists in cardiology. Any discrepancy was resolved by consensus.
Results: Eight thousand seven hundred and thirty-seven echo studies were performed over 3 consecutive years (2003—2005); 108 (1.24%) met search criteria and were analysed. There were only five requests for cardiomegaly alone, none of which had a clinically relevant abnormality. However, 42/66 (64%) of those with specific indicators of cardiac disease had echo abnormalities that were felt to be clinically relevant, compared to 6/37 (16%) of those with non-specific indicators.
Conclusion: Isolated cardiomegaly is a surprisingly rare indication for echo in our department, and does not correlate with clinically relevant abnormality. Cardiomegaly in the context of other specific cardiac signs or symptoms, however, does predict abnormal echo findings. Although efforts could be made to triage requests for isolated cardiomegaly, it may be reasonable to provide this small number of patients with the reassurance of a normal echocardiogram.

2.
A technician-led service for detection of patent foramen ovale using transthoracic echocardiography

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Background: The association of patent foramen ovale (PFO) with cryptogenic stroke and decompression illness in SCUBA divers led to an increase in requests for echocardiographic detection of PFO in our department. The need for medically qualified personnel in performing these studies became a limiting factor. We describe the development of a technician-led screening service for PFO detection.
Method: Permission from the local Health Trust was sought and granted for the technician-directed PFO screening service. A protocol was agreed upon. Transthoracic echocardiography with second harmonic imaging was employed as a sensitive yet readily applicable method of detecting clinically relevant intra-cardiac shunts when used with a contrast agent and in association with Valsalva. We selected agitated-saline bubble contrast (ASBC) for our protocol as it avoids the risk of anaphylaxis associated with plasma expanders and the hazards of exposure associated with blood/saline mixtures. Four BSE accredited echocardiographers were identified as being eligible to undergo specialist training, two of whom declined. Two technicians went forward to the local Trust-run intravenous (iv) cannulation course (one half day). Instruction was given in the 2 syringe plus 3-way tap method of generating ASBC and in eliciting the Valsalva manoeuvre from patients. All staff were competent in immediate life support. A physician supervised the first 10 studies for each technician. The first 30 PFO screening studies and reports were checked by a cardiologist.
Results: Over 2 years, 2004—2006, 161 PFO screening tests were performed, physician-aided in 29 (18%) (cf. 98, 2002—2004, physician-aided in 98 (100%)); 139 (86%) tests were performed by specialist technicians, physician-aided in 6 (4%) and 23 (14%) by standard technicians, physician-aided in 23 (100%). There was failure to obtain iv access in 2 cases (0.6%); 82 (51%) scans were positive for PFO.
Conclusion: Echocardiographers can, with clear protocols, structured training and support provide an independent, efficient and reliable PFO screening service. This service has streamlined PFO detection in and contributed to technician education and personal development.

3.
Conscious sedation for transoesophageal echocardiography (TOE): Impact on procedure and patient of titrated low dose sedation

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Background: Sedation practice for TOE varies widely. No sedation is associated with adverse patient experience, and high dose bolus midazolam regimes (5—10 mg) with adverse events; particularly in the elderly. We evaluated prospectively the impact on procedure and patient of a low dose titrated sedation regime.
Methods: All patients undergoing TOE over an 8-week period were involved. Operator guidelines were to give 2 mg midazolam initially (1 mg in the elderly) with further 1 mg boluses depending on response. The operator could also give 25 mg pethidine initially with a further 25 mg depending on response. During the procedure, an independent observer recorded sedation dose, sedation level, ease of intubation and patient compliance (graded up to 5 — good), patient haemodynamics, respiration and adverse events. Afterwards patients completed a questionnaire about their experience.
Results: Fifty-two patients (31 male, 21 female) took part. Median midazolam dose was 3 mg (range 1—8 mg) and pethidine

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25 mg (range 0—50 mg). Of the patients, 40% received ≤2 mg midazolam and 70% received pethidine. Sedation level was similar across final titrated doses. Overall patient compliance and intubation ease were good (compliance — 4.4/5; intubation ease — 4.3/5) and not reduced if patient received ≤2 mg midazolam. Similarly, patient satisfaction was high, with no reduction with low dose midazolam (overall — 4.1/5, ≤2 mg midazolam — 4.0/5, $p = 0.7$). For the whole group, use of pethidine did not impact on intubation ease, patient compliance, patient experience or midazolam dose. However, in those who received ≤2 mg midazolam use of pethidine was associated with significant improvements in intubation ease (3.8/5 vs 4.7/5, $p = 0.03$), compliance (3.8/5 vs 4.9/5, $p = 0.007$) and a trend for increased satisfaction (3.5/4 vs 4.3/4, $p = 0.1$).
Discussion: Low dose sedation with up-titration according to response is acceptable to patients, has minimal adverse events and no impact on procedural ease. The regime mirrors that for other endoscopic procedures and could be adopted as standard guidelines for TOE.

4.
Referral patterns for stress echo in a newly established service

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A new stress echo (SE) service was set up by the same echocardiography clinical lead consultant at a DGH and a tertiary referral centre site. The first 100 patients (age: 63 ± 9 years, males/females: 56/44) had either DSE (77) or EE (23). Thirty-eight studies were performed at the DGH site and 62 at the tertiary referral site. Main reasons for referral were:

(A) Suspected angina with known or expected nonconclusive ETT (34). There was a high prevalence: 25/34 (73%) of women patients in this group. Most patients in this group had either a low (19) or an intermediate (11) likelihood of disease with only 4 patients having a high likelihood.
(B) Suspected angina after revascularisation (17).
(C) Ischaemia assessment for possible intervention in patients with borderline lesions (15).
(D) Pre-intervention assessment for viability (12).
(E) Cardiac assessment before elective noncardiac surgery (4).
(F) HCMP assessment (16).
(G) Valvular heart disease (2).

Results: There was no positive result among those with low pre-test likelihood of disease. A comparison of referral patterns between the two centres showed that the more specialised requests (groups C, D, F, G) were more likely to originate from the tertiary referral centre: 47/62 (76%) while most group A patients were DGH patients: 22/38 (58%).
Conclusions: Referrals for a new and previously little used diagnostic technique did reflect established practice and guidelines for stress imaging.
Tertiary referral centre cases were more likely to have a higher pre-test likelihood of positive findings.
The cost-effectiveness of referring patients with low likelihood of disease for stress imaging testing needs to be reconsidered.

5.
Clinical utility of transthoracic echocardiography in the investigation of ischaemic stroke and TIA — An audit of 1087 patients

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Background: Transthoracic echocardiography (TTE) is commonly performed in patients with ischaemic stroke or transient ischaemic attack (TIA). However, the diagnostic utility of echocardiography in this patient group has not been systematically evaluated.
Methods: Data were collected prospectively from all patients undergoing echocardiography in a district general hospital from 1992 to 2006. The data were collected into a purpose built database. Of the 30,634 echocardiograms performed, 1087 (3.54%) were for investigation of ischaemic stroke or TIA. Data analysis was by multiple structured queries of the database (mean age 66.8 years, range 17—95 years, 57% male), and searches were performed to identify clinical findings considered to have therapeutic implications (ventricular thrombus or aneurysm, left atrial thrombus, rheumatic heart disease, inter-atrial shunts, vegetations, mitral valve prolapse and septal aneurysm).
Results: Of the 1087 echocardiograms performed for ischaemic cerebral events, clinical findings with therapeutic implication in the management of stroke were found only in 12 patients (1.1%). Six patients had left ventricular thrombus (0.55%) and six patients had mitral stenosis (0.55%). Atrial septal aneurysm, a finding of doubtful clinical significance, was noted in 10 patients (0.92%). Other abnormalities without direct therapeutic implications included left ventricular hypertrophy in 353 patients (32.5%) and systolic dysfunction in 79 patients (7.3%: mild 32, moderate 36 and severe 11).
Conclusion: This review of current clinical practice reveals that the diagnostic yield from transthoracic echocardiography in patients with ischaemic cerebral events is very low. We recommend that TTE should be done more selectively in patients more likely to have a cardiac source of emboli.

6.
Quality control in echocardiography: A DGH experience

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The need for quality control (QC) in echocardiography is increasingly recognized lately. The UK practice of reliance on technician read studies only magnifies the need for a well-set QC system. We present a model for running such a system in a District General Hospital (DGH)-based echocardiographic laboratory.
Setting: A 1000-bed DGH with a cardiorespiratory department based echocardiographic service with seven physiologists involved in scanning on a regular basis. A two-pronged approach was devised to ensure QC.

(1) General framework to maintain professional standards:
  (a) Designated lead clinician and lead technician.
  (b) Established local echo study protocol.
  (c) Established criteria for requiring peer/physician opinion.
(2) Specific QC framework for teaching and self- and peer-assessment:
  (a) Weekly meetings for case reviews with emphasis on special cases and studies execution issues. A meetings logbook is kept by the lead clinician/technician with a requirement of ≥75% yearly attendance.
  (b) Quarterly teaching sessions focused on a special topic.
  (c) Each technician has two cases/month randomly picked by the lead clinician for quality review. The comments and grading are recorded on a dedicated form for self-assessment and progress monitoring.

	Case 1	Case 2
Technical execution: M mode/2D (1—5)		
Technical execution: spectral Doppler (1—5)		
Technical execution: colour Doppler (1—5)		
Standard measurements (1—5)		
Clinical information conveyed (Y/N)		