Impact of transthoracic versus transcatheter versus surgical approach for heart

Methods

The median time between TTE and TOE was 2 days.

Results

images. Indications for surgery to prevent embolism using the imaging. Vegetation length was measured on two dimensional defination length and the potential impact on indications for patients with IE will undergo TOE. We investigated whether where trans-thoracic (TTE) is inconclusive. Therefore, not all do not specify which modality should be used for the measurement. Transoesophageal echocardiography (TOE) imaging is only a Class I indication for prosthetic heart valves or measurement. Transoesophageal echocardiography (TOE) imaging rather than TTE vegetation length. 11/59 (18.6%) cases would change from no indication for surgery to a class IIa indication and 5/59 (8.5%) cases would change from no indication for surgery to a class IIb indication. Conclusion TTE often underestimates vegetation length compared to TOE. The change in vegetation length recorded between the two modalities would have changed the indication for surgery to prevent embolism in 27% patients. Measurements of vegetation length to determine surgical intervention for the prevention of embolization should be taken from TOE imaging rather than TTE. Conflict of Interest Nil

11 IMPACT OF TRANSTHORACIC VERSUS TRANSOESOPHAGEAL ECHOCARDIOGRAPHY MEASUREMENT OF VEGETATION LENGTH IN INFECTIVE ENDOCARDITIS ON INDICATIONS FOR SURGERY

David Hoare, Sanjeev Bhattacharyya, Guy Lloyd, William J Young, Simon Woldman. St Bartholomew’s Hospital, London

Introduction Infective Endocarditis (IE) has high mortality. Longer vegetation length is associated with increased stroke risk and mortality. Guideline indications for surgery to prevent embolism are based on vegetation length. However they do not specify which modality should be used for the measurement. Transoesophageal echocardiography (TOE) imaging is only a Class I indication for prosthetic heart valves or where trans-thoracic (TTE) is inconclusive. Therefore, not all patients with IE will undergo TOE. We investigated whether there are differences in TTE and TOE measurement of vegetation length and the potential impact on indications for surgery.

Methods This was a retrospective study of 68 patients with definite endocarditis that had undergone both TOE and TTE imaging. Vegetation length was measured on two dimensional images. Indications for surgery to prevent embolism using the ESC 2015 guidelines were compared for vegetation length on TOE and TTE.

Results The median time between TTE and TOE was 2 days. 21/68 (30.8%) patients with vegetations identified on TOE were not identified on TTE. Of the remaining 47 patients, 27 (57.4%) had longer vegetations measured on TOE than on TTE with the mean difference being 7.8mm. 2/47 (4.3%) patients had the same vegetation length on TOE as on TTE. 18/47 (38.3%) patients had longer vegetations measured on TTE than on TOE with the mean difference being 4.3mm. The mean difference in vegetation length overall was 5.9mm. Of the 59 patients with left sided endocarditis, 16 cases (27.1%) would change their surgical indication based on using TOE vegetation length rather than TTE vegetation length. 11/59 (18.6%) cases would change from no indication for surgery to a class IIa indication and 5/59 (8.5%) cases would change from no indication for surgery to a class IIb indication.

Conclusion TTE often underestimates vegetation length compared to TOE. The change in vegetation length recorded between the two modalities would have changed the indication for surgery to prevent embolism in 27% patients. Measurements of vegetation length to determine surgical intervention for the prevention of embolization should be taken from TOE imaging rather than TTE.

Conflict of Interest Nil

12 TRANSOCATHETER VERSUS SURGICAL APPROACH FOR SEvere aortIC stenosis with concomitant coronary artery disease: a systematic review and meta-analysis of early and mid-term outcomes

Rafael Kotronias, Jonathan Bray, Roberto Scansini, Skanda Rajasundaram, Dimitrios Terentes-Printzios, Giovanni Luigi De Maria, Rajesh Kharbanda, Mamad Mamas, Rodrigo Bagur, Adrian Bannning. Heart Centre, Oxford University Hospitals NHS Trust; The Heart Centre, Royal Stoke Hospital, University Hospital of North Midlands Trust; Department of Epidemiology and Biostatistics, Schulich School of Medicine & Dentistry, Canada

Introduction Coronary artery disease (CAD) is frequently encountered in patients undergoing transcatheter aortic valve replacement (TAVR). Contemporary recommendations advocate revascularisation of patients with severe aortic stenosis (AS) and concomitant significant coronary artery disease (CAD) by either a surgical or percutaneous approach. We undertook a systematic review and meta-analysis to evaluate the early and mid-term outcomes of patients who underwent surgical aortic valve replacement (SAVR) and coronary artery bypass grafting (CABG) against patients who had TAVR and percutaneous coronary intervention (PCI).

Methods A search of Medline and Embase was performed to identify studies comparing transcatheter and surgical approaches. Our search was independently screened by two investigators. Random effects meta-analyses with the Mantel-Haenszel method were performed to estimate the odds of adverse outcomes. Analyses were performed with RevMan (Review Manager version 5.3.5, Nordic Cochrane Centre, Denmark).

Results 1770 participants from six studies (5 observational, 1 randomised) were included in the meta-analysis (631 TAVR and PCI, 1139 SAVR and CABG). The mean age of participants was 79.2 years and 58.9% were male. TAVR was performed via both transapical/transaortic and transfemoral routes, using both self-expandable and balloon expandable valve systems. PCI was conducted either concomitant to TAVR...
or up to a year before. Risk of bias assessed using the ROB-INS-I tool, identified 1 study at low risk and 4 studies at high risk of bias, predominately due to selection bias. There were no significant differences in effect estimates for early and mid-term mortality (OR: 0.78; 95% CI, 0.50-1.20 and OR: 1.09; 95% CI, 0.80-1.94) or myocardial infarction (OR: 0.52 95% CI, 0.20-1.33 and OR: 1.34; 95% CI, 0.67-2.65). No significant difference was noted in early cerebrovascular accidents (OR: 0.80; 95% CI, 0.35-1.87). A transcatheter approach was associated with a higher rate of new pacemaker insertion (OR: 3.47; 95% CI, 1.98-6.06) and major vascular complications (OR: 14.44; 95% CI, 4.42-47.16), but a lower rate of acute kidney injury (OR: 0.41; 95% CI, 0.19-0.91).

Conclusion These data suggest that in patients with severe AS and CAD a transcatheter approach has comparable outcomes to a surgical approach. Pending high level evidence, surgical risk assessment should form the cornerstone of individualised decision making.

Conflict of Interest None

13 INDEXED LEFT ATRIAL VOLUME PREDICTS ADVERSE OUTCOMES INDEPENDENT OF THE SEVERITY OF ISCHAEMIC MITRAL REGURGITATION-A COHORT STUDY OF 1000 PATIENTS FOLLOWING ACUTE MYOCARDIAL INFARCTION

1Harish Sharma, 2Ashwin Radhakrishnan, 1Samuel Brown, 2John May, 1Naval Zia, 2Rashi Joshi, 2Peter F Ludman, 1Jonathan Townsend, 2Sagar N Doshi, 1Sohail Q Khan, 2Alex Zaphiriou, 2Sudhakar George, 3Adnan Nadir, 4Rick Steeds. 1University Hospitals Birmingham NHS Foundation Trust

Background Ischaemic mitral regurgitation (IMR) is associated with left atrial (LA) dilatation. In patients with primary MR, LA enlargement is an independent predictor of mortality following medical management and mitral valve surgery. The prognostic significance of LA dilatation in IMR post-myocardial infarction (MI) has not been studied.

Purpose To determine the impact of LA dilatation on mortality in patients with IMR.

Methods 1000 consecutive patients admitted to the Queen Elizabeth Hospital Birmingham with MI who underwent percutaneous coronary intervention were included. Early inpatient TTE was performed within 24-48 hours by accredited echocardiographers using standard multiparametric quantification of IMR, including proximal isovelocity surface area (PISA), effective regurgitant orifice (EROA), vena contracta (VC), and regurgitant volume (RVol). LA size was measured by the recommended biplane method for calculation of LA volume and indexed to body surface area (Mosteller). Analysis was performed on patients with indexed LA volume (LAVi) above and below 34ml/m2 (defined as the upper limit of normal in European Cardiovascular Imaging guidelines).

Results MR was observed in 294/1000 patients (29.4%) post-MI, graded as mild (76%), moderate (21%) and severe (3%). A total of 275/294 (94%) had complete chamber volume data.

LA dilatation (LAVi > 34ml/m2) was seen in 124 (45%) patients while 151/275 (55%) had normal LA volume (LAVi <34ml/m2). Patients with LA dilatation had more severe MR by multiparametric categorisation (mild 60%, moderate 34%, severe 7%) than those with normal LA volume (mild 87%, moderate 13%, severe 0.6%). Those with larger LAVi also had more severe MR based on individual quantification, as determined by larger mean PISA (0.63+/-0.21 vs 0.48+/-0.18; p <0.0001), EROA (0.24+/-0.13 vs 0.18+/-0.16; p=0.0009), VC (0.56+/-0.21 vs 0.45+/-0.17; p <0.0001) and RVol (40 +/-25 vs 30+/-24; p=0.0008).

Although patients with LAVi > 34ml/m2 were older (76+/-11 years vs 70+/-12; p <0.0001), they were less likely to have had an ST-elevation MI (35% vs 51%; p <0.01) and had smaller peak high sensitivity troponin [650ng/L (IQR 127-2991) vs 1176ng/L (IQR 208-3705)]. Despite the smaller infarct size and similar LVEF between groups (48+/-15% vs 48+/-14%), all-cause mortality was significantly higher amongst those patients with IMR who had LA dilatation (27.4% vs 13.3%; p <0.01). After a mean follow up of 3.2 years, overall mortality amongst all patients with IMR was 19% (54/294) and patients with LAVi > 34ml/m2 accounted for 60% of this mortality.

Conclusion IMR patients with LA dilatation have significantly higher mortality than those with normal LA volume. Those with LAVi > 34ml/m2 account for 60% of all IMR mortality, despite fewer ST elevation infarcts and smaller troponin rise. Future studies of intervention for IMR should consider LA dilatation as a potential marker of outcome.

Conflict of Interest None

14 THE EFFECT OF DIFFERENT CONTOURING TECHNIQUES ON CARDIAC MAGNETIC RESONANCE ASSESSMENT OF RIGHT VENTRICULAR VOLUMES IN REPAIRED TETRALOGY OF FALLOT: IMPLICATIONS ON PREOPERATIVE THRESHOLDS FOR INTERVENTION

1Freya Lodge, 2Christopher McAlloon, 1Rick Steeds, 1William Moody, 1Lucy Hudsmith, 1University Hospitals Birmingham NHS Foundation Trust; 2Gloucester Hospitals NHS Foundation Trust

Introduction Patients with repaired tetralogy of Fallot (RTOF) develop chronic pulmonary regurgitation and require monitoring for right ventricular dilatation. Pulmonary valve replacement can prevent irreversible right ventricular (RV) dilatation and dysfunction and cardiac magnetic resonance (CMR) is used to facilitate its optimal timing. There are however, different techniques published for measuring RV volumes. We sought to determine whether the choice of myocardial contouring technique affects preoperative RV volumetric thresholds for intervention.

Methods Consecutive patients (n = 24, age 25.2±15.5 years, 42% male) with RTOF were identified retrospectively, having undergone CMR for clinical surveillance at a Level 1 ACHD surgical referral centre. Volumetric analysis was made by two experienced, independent observers blinded to clinical status. Right ventricular volumes were measured using three contouring techniques: 1) smooth, where the trabeculae were counted as part of the blood volume; 2) detailed, using semi-automated thresholding; 3) detailed, with manual contours. For 2) and 3), trabeculae and sub-valvar apparatus were counted as part of the myocardium. Inter-observer variability (F.L. & C.M.) was assessed blinded in 5 randomly selected patients.

Results Right ventricular end-diastolic volume (EDV) was largest for smooth contours compared with thresholding and...