

prevalence of low flow and its accompanying vascular functional parameters after successful aortic valve replacement (AVR).

Aim of the study and methods We set out to assess the prevalence of low flow as well as of abnormal valvulo-aortic impedance and systemic arterial compliance following AVR. We recruited unselected, consecutive patients attending our echocardiography laboratory who had interpretable echo images and LF ejection fraction $\geq 50\%$. We calculated aortic valve area (AVA) by continuity equation; stroke volume indexed to body surface area ($SV_i = LVOT_{VTI} \times LVOT_{Area}$; units -- ml/m²; normal >35 ml/m²) valvulo-aortic impedance $Z_{va} = (MPG + SBP) / SV_i$; units -- mmHg/ml/m²; normal <5 mmHg/ml/m² where MPG is mean pressure gradient, SBP is systolic blood pressure and systemic arterial compliance (ml/mm Hg/m²) $SAC = SV_i / \text{Pulse pressure}$, normal ≤ 0.6 .

Results We studied 77 patients with AVR, 49 male, mean age (SD) 68 (7.8) years. The mean AVA (SD) was 1.59 (0.59) cm²; mean Z_{va} (SD) was 5.02 (0.58); mean SV_i (SD) was 30.6 (9.6); mean SAC was 0.48 (0.18). AVA was <1 cm² in 11 (14%) patients with AVA, 1–1.5 cm² in 24 (32%) and >1.5 cm² in 424 (55%). SV_i was low in 57 (74%), Z_{va} was elevated in 37 (48%), and SAC was elevated in 16 (21%) of patients. A higher proportion of patients had abnormal SV_i , Z_{va} and SAC amongst those with AVA <1.5 cm² than in those with AVA >1.5 cm².

Conclusion A significant proportion of patients have abnormal valvulo-aortic loads, low-flow states, and abnormal arterial compliance after successful aortic valve replacement. Further study is warranted to assess the potential clinical significance of these findings.

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EARLY EVOLUTION OF A MINIMALLY INVASIVE MITRAL PROGRAMME

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10.1136/heartjnl-2016-309890.154

Introduction Minimally invasive mitral valve (MIMV) surgery is technically challenging with a long learning curve. We examined the evolution of repair techniques in a new program. Methods MIMV surgery at our institution is performed through a 6 cm right anterior minithoracotomy. We examined prospectively collected data on all patients undergoing MIMV between March 2011 and December 2014. Data are presented as medians (interquartile range). Results 99 patients had MIMV procedures during this period. Median age was 61 (53 to 68) years, 31 (31%) were female, 2 were reoperations. The repair rate for degenerative and functional disease was 94% (84 of 89 patients) with no/trivial residual MR (n = 82, 98%) or mild MR (n = 2, 2%) on the intra-operative echo. All rheumatic valves were electively replaced. Twenty (20%) patients underwent concomitant procedures: cryomaze (n = 13), patent foramen ovale closure (n = 6), tricuspid valve repair (n = 3). Bypass and clamp times were 196 (170 to 221) and 132 (111 to 150) minutes respectively. There was one conversion to sternotomy for mild residual MR found after femoral decannulation; this patient left hospital 6 days later with no regurgitation. There was no mortality and no strokes. Duration of ventilation, ITU and hospital stay were 8 (6–10) hours, 2 (1–3) and 6 (5–8) days respectively. When

examined by tertile, the use of GoreTex loops increased significantly as the programme progressed ($p < 0.001$) while resective techniques declined ($p < 0.001$). Conclusions High rates of valve repair are achievable with minimally invasive mitral surgery. There has been a significant change in the repair techniques employed as the programme developed.

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HISTOPATHOLOGICAL STUDY OF 62 SUDDEN CARDIAC DEATH VICTIMS WITH ISOLATED MITRAL VALVE PROLAPSE

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10.1136/heartjnl-2016-309890.155

The aim of the study was to evaluate the cardiac histopathological findings of sudden cardiac death victims with isolated mitral valve prolapse. We studied 62 sudden cardiac death victims with isolated mitral valve prolapse that represented 1.7% of our total sudden cardiac death cohort. The heart was examined macroscopically and microscopically. Toxicology results were negative. The series included 33 males and 29 females (mean age 37 ± 14 years). In all cases the mitral valve exhibited degenerative changes of bileaflet thickening, stretching and prolapse of the leaflets in to the left atrium. The left ventricle showed no evidence of fibrosis macroscopically, but in 46 (74%) of cases myocardial fibrosis was detected with histology. The majority of the sudden cardiac death victims with myocardial fibrosis had involvement of both papillary muscles and the adjacent myocardial wall (30 cases, 65%), while in the remaining it was localised to one papillary muscle and the adjacent wall. The posteromedial papillary muscle and posteroinferior wall were involved in the majority (42 cases, 91%). The involvement of the left ventricular wall was always subendocardial and/or midmural and the type of fibrosis was replacement type and/or interstitial. In conclusion, the majority of sudden cardiac death with isolated mitral valve prolapse exhibits a bileaflet mitral valve prolapse with localised fibrosis, involving one or both papillary muscles and the adjacent subendocardial layer of the left ventricular wall. This myocardial fibrosis can provide a substrate for ventricular arrhythmias and sudden cardiac death. However 26% of the sudden cardiac death victims had histologically normal heart so other mechanisms to explain the sudden death must be considered.

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PATIENT REPORTED OUTCOMES MEASURES FOLLOWING MITRAL VALVE REPAIR: MINIMALLY INVASIVE VIDEO-ASSISTED COMPARED TO STERNOTOMY

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10.1136/heartjnl-2016-309890.156

Objectives There is a paucity of evidence regarding patient reported outcomes following mitral valve repair (MVR). Our aim was to compare these in patients having minimally invasive (MI) and sternotomy (St) approaches.

Method Between August 2011 and June 2014, 235 patients underwent MVP, of which 71 (30.2%) had a MI procedure performed through a 5–6 cm right anterior minithoracotomy. We adapted the Composite Physical Function questionnaire to retrospectively assess post-operative quality of life in 3 domains (scores were converted into a 0–100 scale) – Recovery Time (higher score indicated longer recovery time); Pain (higher score indicated increased pain) and Treatment Satisfaction (higher score indicated improved satisfaction). The scores were risk-adjusted using pre-operative characteristics (age, gender, urgency, Logistic EuroSCORE). Data are reported as median (interquartile range).

Results The response rate was 70.6% (n = 166) of which 51 (30.7%) underwent MI repair. Comparing St to MI, 14.8% vs 35.3% resumed 'normal activities' within 6 weeks of their operation (p = 0.003). The risk-adjusted Recovery Time domain results for St vs MI were 54.4 (44.4,69.6) vs. 44.9 (26.7, 58.0), p < 0.001; likewise, the risk-adjusted Pain domain results were 31.8 (16.9, 50.0) vs. 21.9 (12.4, 32.8), p = 0.03; and the risk-adjusted Treatment Satisfaction domain results were 98.1 (83.9, 99.9) vs. 98.3 (88.9, 100.0), p = 0.25. Comparing St to MI, 53.0% vs. 78.4% reported that they were 'Very Satisfied' with the appearance of their scar (p = 0.002).

Conclusion Minimally invasive mitral valve repair speeds recovery, reduces pain and improves cosmesis compared to a sternotomy approach. Both approaches score highly on patient satisfaction.

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PREVALENCE OF AORTIC VALVE ABNORMALITIES IN THE ELDERLY: A SCREENING STUDY USING HAND-HELD ULTRASOUND SCANNING

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10.1136/heartjnl-2016-309890.157

Background Degenerative aortic stenosis (AS) is increasingly recognised and treated with valve replacement in the elderly. The advent of percutaneous aortic valve intervention (TAVI) has opened opportunities for treatment in patients who would have been turned down for surgery just a few years ago, with a commensurate increase in health care-associated costs. However, there is a relative lack of data regarding the prevalence of AS in this very group of older patients, which can make planning and delivery of a TAVI service difficult.

Aim of the study

We set out to investigate the prevalence of aortic valve abnormalities by performing echocardiography with a hand-held scanner in elderly patients attending a large GP surgery for non-cardiac reasons. We hypothesised that a strategy of echo screening for AV abnormalities in this population would have a high yield in detecting clinically relevant pathology.

Methods One hundred consecutive patients aged >75years old who had no history of a heart murmur, myocardial infarction or heart failure had a detailed echocardiographic exam using a hand-held scanner without spectral Doppler capabilities. Cardiac risk factors were documented. We classified aortic valves as normal, aortic sclerosis (thickened leaflets without restriction) and aortic stenosis (thickened, restricted leaflets). Qualitative LV function assessment and colour Doppler assessment of aortic and mitral regurgitation were also obtained.

Results The mean age was 78.3 (8.7) years. The quality of the images was good in 74 studies, moderate in 20 and poor in 6. We found 48 normal valves, 28 cases of aortic sclerosis and 24 of aortic stenosis (of which 4 moderate and 1 severe). Aortic regurgitation was present in 35 cases (30 mild, 5 moderate), and LVEF was normal in 92 subjects, mildly impaired in 6 and moderately impaired in 2. There were 2 cases of severe MR and 4 of moderate MR, all organic. Neither cardiac risk factors nor mitral annular calcification were associated with aortic sclerosis or stenosis.

Conclusions Our preliminary data suggest that a strategy of echocardiographic screening in patients >75years of age identifies a significant number of abnormalities that require formal cardiology follow-up or work up for intervention, including a 5% prevalence of moderate or severe AS, and 6% prevalence of moderate or severe MR.

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NT-PRO BNP AND SURVIVAL IN AORTIC STENOSIS

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10.1136/heartjnl-2016-309890.158

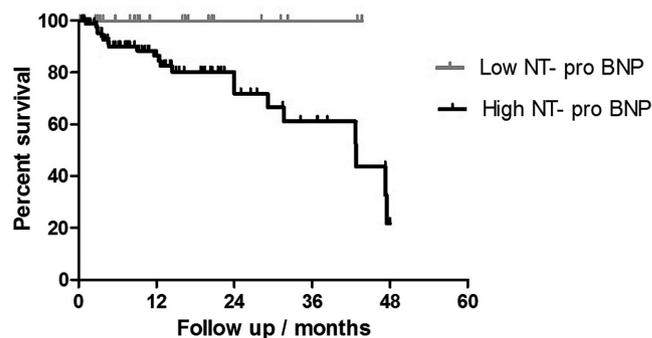
Introduction Elevated NT-pro BNP is associated with worse outcome in patients with cardiomyopathy.

Hypothesis We hypothesized that a mild elevation in NT-pro BNP may be associated with a worse outcome in patients with Aortic Stenosis (AS).

Methods Between 2011 and 2015, consecutive consenting patients with moderate (1.0–1.5 cm²) or severe (<1 cm²) AS considered for aortic valve intervention (either for severe AS or moderate AS with coronary disease) who had a cardiovascular magnetic resonance (CMR) scan undertaken for anatomy and function and also had blood stored for biomarker analysis were included. NT-pro BNP was measured using one-step immunoassay sandwich method with a final fluorescent detection (ELFA). Survival was obtained from hospital notes, electronic records and the National Strategic Office.

Results 112 patients (76 ± 10 years, 78 male) were included. The group was dichotomised according to NT-pro BNP value, into normal NT-pro BNP value group (values from 0–300 pg/ml, 23 patients) and high group (>300 pg/ml, 89 patients). End point was all cause mortality. At a median of 12 months follow-up, 21 patients had died, all from the high NT-pro BNP group. The high NT-pro BNP group had significantly

Survival in Low and High NT- pro BNP groups



Abstract 158 Figure 1 Survival in low and high NT - Pro BNP groups