**Conclusion** These results indicate that in principle VO₂max in ml/kg/min as an indirect indicator of cardiac function or for cardiac transplantation selection is unreliable when applied to overweight heart failure patients. Extending this concept to the entire spectrum of body weights, the practice of correcting VO₂max by body weight in cardiological practice would also require urgent reconsideration.

**Methods and Results** We studied this question by measuring beat-by-beat stroke volume (flow) using Doppler echocardiography, and blood pressure using continuous finger photoplethysmography, during and after atrioventricular delay adjustment from 40 to 120 ms in 19 subjects with cardiac pacemakers. Quintuplicate experimental runs were performed. Blood pressure and stroke volume (flow) both increased immediately (p < 0.0001 within one heartbeat). The immediate pressure increment correlated strongly with the immediate flow increment (r = 0.74, p = 0.0001). Pressure showed a partial decline a few seconds later (average rate 0.65 mm Hg/beat, r = −0.98, p < 0.0001), in contrast, flow did not decline (p = NS), Abstract 100 figure 1. Signal-to-noise ratio was significantly better for pressure than flow (6.5 ± 3.6 vs 2.1 ± 1.4, p < 0.0001), Abstract 100 figure 2.

**Conclusions** Improving atrioventricular delay immediately increases blood pressure; however this effect decays slightly over the subsequent minute. This is due to compensatory vasodilatation rather than a reduction in cardiac function. Pressure changes are simpler to measure and easier to distinguish from random variation than Doppler measurements of flow, but are best measured immediately, before the vascular compensation.
Abstract 101 Figure 1 Survival of RVSP quartile.

Conclusion An RVSP of greater than 42 mm Hg is predictive of increased mortality in heart failure. This is finding is independent of LVSD and COPD.

102 ETHNIC DIFFERENCES IN ENDOThelial FUNCTION IN CHRONIC HEART FAILURE

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E Shantstila, 2P S Gill, 3G Y H Lip, 1University of Birmingham Centre for Cardiovascular Sciences, City Hospital, Birmingham, UK; 2University of Birmingham, Primary Care and Populational Sciences, Birmingham, UK; 3University of Birmingham Centre for Cardiovascular Science, Birmingham, UK

Background Endothelial dysfunction is characteristic of patients with heart failure (HF) and is associated with an increased risk of future cardiovascular events. However, data on ethnic differences in endothelial function in HF are scarce. In this study we aimed to compare parameters of macro- and micro-vascular endothelial function and arterial elasticity in HF age- and sex-matched patients of different ethnic origin: (i) white European, (ii) south Asian and (iii) African-Caribbean. Additionally, SA patients with systolic HF were compared to two matched control groups: (i) south Asian patients with coronary artery disease without HF (disease controls) and (ii) south Asian “healthy controls”.

Methods We recruited 186 age/sex-matched patients with HF (ejection fraction <40%) of SA (n=43, age 66.5±11.1 years), white (n=44, age 68.4±9.4 years) and African-Caribbean (n=21, age 69.2±10.3 years) origin; as well as 36 disease controls (age 64.0±10.6 years) and 40 healthy controls (n=40, age 63.5±9.24 years). Macrovascular endothelial function was assessed by brachial artery flow mediated dilation in response to hyperaemia (FMD) and glyceryl trinitrate were iontophoresis of acetylcholine and sodium nitroprusside. Arterial elasticity of forearm skin (DRT4, Moor Instruments, UK) after the onset of breathlessness. Systolic and diastolic dysfunction and outcome are ill defined; our aim was to evaluate the natural history of the disease in the UK in a group of thoroughly characterised patients. The series included all cases of biopsy proven transthyretin (TTR) amyloidosis with wildtype TTR gene sequence who were prospectively followed up between January 2001 and May 2010. Clinical, biochemical, ECG and echocardiographic evaluation were performed at presentation to our centre.

Patient survival was estimated using Kaplan–Meier analysis. 55 patients with histologically proven SSA; 36 (65.5%) from cardiac, 14 (25.4%) from GI tract, 3 (5.5%) from bladder, 1 (1.8%) from fat and 1 (1.8%) from carpal tunnel tissue were identified. 49 (89%) were male. The median age at diagnosis and death were 74 (range 66–89) and 79 (range 69–84) years respectively. Survival from symptom onset and diagnosis was 7.04 (range 0.54–8.41) and 4.58 (range 0.07–5.41) years respectively. In recent years more patients have been diagnosed with 2 (3.6%), 14 (25.5%) and 39 (70.9%) patients between 2001–2003, 2004–2006 and 2007–2009 respectively. The most common presentation was with breathlessness in 28 patients (51%). Twenty-four patients (43.6%) had prior carpal tunnel operations. Twenty (18.8%) patients had a history of ischaemic heart disease. Fifteen had a coronary angiogram; 8 were reportedly normal and 7 required intervention. Arrhythmias were common, 20 patients (36.3%) had a history of atrial fibrillation and 6 (10.9) had pacemakers in situ. ECG findings were; 24 (43.6%) in AF, 6 (10.9%) first degree block, 10 (18.2%) left bundle and 6 (10.9%) right bundle branch block, 27 (49%) T wave changes, 11 (20%) <5 mm complexes in all inferior leads. Echocardiographic findings revealed the median IVSd was 1.7 (range 1.1–2.5) cm, median E/A ratio was 2.7 (range 0.79–5.4), E/E’ 15.5 (range 7.5–41.1) and ejection fraction was 45.9 (range 15–83%). Blood results showed; the median baseline NT-proBNP was 356.1 (range 5–2611) and troponin T 0.03 (range 0.01–0.28). Twenty-five patients had a troponin T >0.03 (45%). Ten patients (18%) had a detectable paraprotein and 2 (3.6%) had bence jones proteins. SSA is present in >25% of the very elderly at post mortem but was rarely diagnosed during life. It is becoming more frequently recognised perhaps due to widespread use of cardiac MRI. Most patients are male but women can be affected. A history of carpal tunnel syndrome is common. The diagnosis is often made after the onset of breathlessness. Systolic and diastolic dysfunction

103 SENILE SYSTEMIC AMYLOIDOsis: A COMMON CAUSE OF HEART FAILURE IN THE ELDERLY?

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1J H Pinney, 2H J Lachmann, 2J D Gillmore, 2A Wechalekar, 3S D D Gibbs, 3P Sattianayagam, 4S M Banyersdad, 43J D Dung, 4N Wassem, 4C A McCarthy, 4P N Hawkins, 4C J Whelan. 1National Amyloidosis Centre and UCL Centre for Nephrology, UCL Division of Medicine, Royal Free Hospital, London, UK; 2National Amyloidosis Centre, UCL Division of Medicine, Royal Free Hospital, London, UK; 3National Amyloidosis Centre, UCL Medical School, Royal Free Hospital, London, UK; 4National Amyloidosis Centre, London, UK; 5The Heart Hospital, UCL Medical School, London, UK; 6National Amyloidosis Centre, UCL Medical School, University of London, London, UK; 7St George’s Hospital, University of London, London, UK

Senile systemic amyloidosis (SSA) is a rare cause of heart failure due to the deposition of wildtype transthyretin. The clinical features and outcome are ill defined; our aim was to evaluate the natural history of the disease in the UK in a group of thoroughly characterised patients. The series included all cases of biopsy proven transthyretin (TTR) amyloidosis with wildtype TTR gene sequence who were prospectively followed up between January 2001 and May 2010. Clinical, biochemical, ECG and echocardiographic evaluation were performed at presentation to our centre.

Survival from symptom onset and diagnosis was 7.04 (range 0.54–8.41) and 4.58 (range 0.07–5.41) years respectively. In recent years more patients have been diagnosed with 2 (3.6%), 14 (25.5%) and 39 (70.9%) patients between 2001–2003, 2004–2006 and 2007–2009 respectively. The most common presentation was with breathlessness in 28 patients (51%). Twenty-four patients (43.6%) had prior carpal tunnel operations. Twenty (18.8%) patients had a history of ischaemic heart disease. Fifteen had a coronary angiogram; 8 were reportedly normal and 7 required intervention. Arrhythmias were common, 20 patients (36.3%) had a history of atrial fibrillation and 6 (10.9) had pacemakers in situ. ECG findings were; 24 (43.6%) in AF, 6 (10.9%) first degree block, 10 (18.2%) left bundle and 6 (10.9%) right bundle branch block, 27 (49%) T wave changes, 11 (20%) <5 mm complexes in all inferior leads. Echocardiographic findings revealed the median IVSd was 1.7 (range 1.1–2.5) cm, median E/A ratio was 2.7 (range 0.79–5.4), E/E’ 15.5 (range 7.5–41.1) and ejection fraction was 45.9 (range 15–83%). Blood results showed; the median baseline NT-proBNP was 356.1 (range 5–2611) and troponin T 0.03 (range 0.01–0.28). Twenty-five patients had a troponin T >0.03 (45%). Ten patients (18%) had a detectable paraprotein and 2 (3.6%) had bence jones proteins. SSA is present in >25% of the very elderly at post mortem but was rarely diagnosed during life. It is becoming more frequently recognised perhaps due to widespread use of cardiac MRI. Most patients are male but women can be affected. A history of carpal tunnel syndrome is common. The diagnosis is often made after the onset of breathlessness. Systolic and diastolic dysfunction