sibility was measured as end-systolic (ES) – end-diastolic (ED) total ALL normalized to an ED reference; and alternatively as mid-leaflet strain measured by tracking echo features.

**Results:** ALL was greater in all disease groups vs normal (p<.001). The maximum systolic increase in ALL relative to ED was 7.9 ± 7.4 % in normals vs >2-fold higher (17.6 ± 11.2 %) in MVP; it was 63-76% lower (2.9 ± 3.0 %, 1.9 ± 3.1 %) in FMR and MS, with comparable results for segmental AL strain (Table).

Conclusio*n:** Noninvasive echocardiographic measures of MV distensibility based on systolic changes in total length or segmental strain are feasible. Results are consistent with excised valve biomechanics, showing increased distensibility in MVP and decreased values in FMR and MS. Ultimately, these techniques have the potential to monitor response to new therapies that aim to improve MV biology and mechanics to reduce MR.

<table>
<thead>
<tr>
<th>Parameter</th>
<th>unit</th>
<th>Norm</th>
<th>MVP</th>
<th>FMR</th>
<th>MS</th>
</tr>
</thead>
<tbody>
<tr>
<td>ALL systole</td>
<td>mm.</td>
<td>26.6 ± 2.7</td>
<td>39.7 ± 5.6*</td>
<td>32.7 ± 4.1*</td>
<td>33.4 ± 5.0*</td>
</tr>
<tr>
<td>ALL diastole</td>
<td>mm.</td>
<td>24.5 ± 3.1</td>
<td>33.5 ± 3.2*</td>
<td>32.0 ± 4.2*</td>
<td>32.8 ± 4.9*</td>
</tr>
<tr>
<td>ALL (sys-di/a)</td>
<td>%</td>
<td>7.9 ± 7.4</td>
<td>17.6 ± 11.2*</td>
<td>2.9 ± 3.0*</td>
<td>1.9 ± 3.1*</td>
</tr>
<tr>
<td>SegL (ES-ED)/ED %</td>
<td>%</td>
<td>9.1± 4.8</td>
<td>19.6 ± 10.9*</td>
<td>3.2 ± 2.6*</td>
<td>2.7 ± 3.7*</td>
</tr>
</tbody>
</table>

*p < 0.05 vs. Normals

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**Normal values of aortic elasticity in 58 adults using Cine-MRI**

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Currently, the recommendation for prophylactic intervention of aortic replacement is based on aortic diameters. Clinical trials have shown that this parameter is not always reliable. Aortic elasticity is a crucial parameter in the follow up of patients at risk. Compliance and distensibility measures can distinguish patients at risk for rupture or dissection from healthy adults, although no norm exists.

The purpose of this study was to determine normal values of compliance/ distensibility of the thoracic aorta in healthy adults using cine-MRI. The influence of sex and tobacco was evaluated.

58 adults (mean age 34.8 ± 11 years), with no history of cardiovascular disease were recruited. Cine-MRI was performed at the level of the pulmonary trunk. Aortic compliance is defined as the relative change in aortic cross-sectional area divided by the change in arterial pressure. Distensibility is calculated as compliance reported to minimal surface area. Automatic post-processing was used to analyse surface areas.

Results show that sex and tobacco have no influence on compliance and distensibility, confirming their small impact on thoracic aortic aneurysms and dissections. Compliance and distensibility values from the ascending aorta correlated negatively with age (r=0.68; p<0.0001 and r=0.77; p<0.0001). Age relative to body surface area is the main factor in aortic stiffness variations in healthy subjects. Prediction curves characterizing normal compliance and distensibility values for a given age are created with confidence interval of 95%. This study on a healthy subject population provides reference values for aortic stiffness. In the management of patients, compliance and distensibility parameters should support surgical indication for patients.

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**Net Atrioventricular Compliance in Patients with Severe Aortic Stenosis**

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**Introduction:** The valvuloarterial impedance (Zva), an estimate of global left ventricular (LV) afterload, has been shown to be associated with LV dysfunction and poor outcome in aortic stenosis (AS). In this situation, whether the Zva may affect the net atrioventricular (A-V) compliance has never been examined. This study was, thus, undertaken to assess the impact of Zva on A-V compliance in patients with severe AS.

**Method and results:** Two dimensional, tissue Doppler imaging and Doppler transthoracic echocardiography were performed in 37 consecutive patients with severe AS (70±13 years, 65% of male, valve area, 0.68±0.3 cm², mean gradient, 44±1-4mmHg). Concomitantly, plasma BNP level was measured. A-V compliance was defined as the change in volume shift between the left atrium and the LV during diastole divided by the change in transmural pressure gradient (Cn = 1270 x (mitral valve area/mitral E-wave downslope)). Zva was calculated by dividing the estimated LV systolic pressure (systolic arterial pressure + aortic mean transvalvular gradient) by the LV stroke volume index. Mean A-V compliance was 9.2±5.3 ml/mmHg (median, 8 ml/mmHg). A-V compliance was well correlated with aortic valve area (AVA) (r=0.61, p=0.0003), Zva (r=0.57, p=0.002), septal E/Ea ratio (r=0.66, p < 0.0001) and BNP (r=0.61, p=0.0003). Moreover, patients with low A-V compliance (<8 ml/mmHg) had lower AVA (p=0.0005) and higher Zva (p=0.004), septal E/Ea ratio (p<0.0001) and BNP (p=0.005). On multivariate analysis, after adjustment for age and LV ejection fraction, septal E/Ea (r=0.50, p=0.0001) and AVA (r²=0.15, p=0.0005) were independently associated with A-V compliance. Zva was also an independent determinant of A-V compliance (r²=0.11, p=0.02) when excluding AVA from the model. Interestingly, symptomatic patients (63%) had significantly lower A-V compliance than asymptomatic patients (7.7±4.9 vs. 11.9±5ml/mmHg, p=0.03).

**Conclusion:** In patients with severe AS, the net A-V compliance is related to LV filling pressure and global LV afterload (valvular and arterial). Further studies are needed to evaluate the impact of A-V compliance on outcome.