Conclusion — In patients with aortic stenosis, radial contraction is load dependant, circumferential contraction is both load- and remodelling-dependant, whereas longitudinal contraction is remodeling-dependant.

2D strain by speckle tracking (%)

<table>
<thead>
<tr>
<th></th>
<th>Pre value implantation</th>
<th>7 day-follow-up</th>
<th>3 month-follow-up</th>
</tr>
</thead>
<tbody>
<tr>
<td>Longitudinal</td>
<td>0</td>
<td>10</td>
<td>20</td>
</tr>
<tr>
<td>Circumferential</td>
<td>0</td>
<td>15</td>
<td>30</td>
</tr>
<tr>
<td>Radial</td>
<td>0</td>
<td>10</td>
<td>20</td>
</tr>
</tbody>
</table>

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In the western world, heart failure, which develops for instance secondary to myocardial infarction, is a major cause of death. Usually, the heart adapts to a primary insult through cardiomyocyte hypertrophy. The emerging concept, however, is that cardiac stem cells contribute to cardiomyocyte renewal in the myocardium. The rate of replacement is low in the normal heart, and is thought to be higher during the response to injury. In this context, the present work aims at generating a transgenic model of inducible cardiomyocyte death to evaluate the degree of cardiac stem cell mobilization during the adaptation of the heart to stress. Therefore, we produced transgenic mice with cardiac-specific overexpression of the human CD25 (hCD25) under control of the α-MHC promoter. This transmembrane protein is inactive in the mouse. However, LMB2, an immunotoxin derived from the Pseudomonas exotoxin directed against hCD25, can be administrated to specifically target hCD25-expressing cardiomyocytes and induce apoptosis. Cardiac-specific expression of hCD25 in transgenics was demonstrated by RT-PCR, Western blot analysis and immunohistochemistry. Administration of LMB2 to neonatal transgenic cardiomyocytes in culture resulted in increased apoptosis after LMB2 injection and significant mortality. The number of dying mice increased proportionally to the dose of injected LMB2.

In the present study, we produced transgenic mice with cardiac-specific overexpression of the human CD25 (hCD25) under control of the α-MHC promoter. This transmembrane protein is inactive in the mouse. However, LMB2, an immunotoxin derived from the Pseudomonas exotoxin directed against hCD25, can be administrated to specifically target hCD25-expressing cardiomyocytes and induce apoptosis. Cardiac-specific expression of hCD25 in transgenics was demonstrated by RT-PCR, Western blot analysis and immunohistochemistry. Administration of LMB2 to neonatal transgenic cardiomyocytes in culture resulted in increased apoptosis after LMB2 injection and significant mortality. The number of dying mice increased proportionally to the dose of injected LMB2.

In vivo, administration of LMB2 to neonatal transgenics resulted in increased apoptosis after LMB2 injection and significant mortality. The number of dying mice increased proportionally to the dose of injected LMB2.

Surviving cardiomyocytes showed abnormal, star-shaped morphology and disorganized sarcomeric structure. In vivo, administration of LMB2 to neonatal transgenics resulted in increased apoptosis after LMB2 injection and significant mortality. The number of dying mice increased proportionally to the dose of injected LMB2.

Surviving transgenic mice sacrificed 3 days after LMB2 administration showed decreased cardiac weight, disorganized cardiac tissue and increased fibrosis. In adult transgenic mice, LMB2 treatment resulted in impaired cardiac function, as shown by echocardiography analysis, and animal death at doses of 30 ng/g and above. Post-mortem analysis revealed necrotic and fibrous cardiac tissues. This model is currently used to induce non-lethal apoptosis in adult animals in view to investigate cardiac precursor recruitment and potential regeneration in the damaged heart.