

The structural basis of progression of cardiac dysfunction in human heart failure

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We would like to present an integrated view on structural aspects of heart failure studied in human patients with either aortic valve stenosis or dilated cardiomyopathy. We will discuss compensatory and degenerative changes of all major constituents of the myocardium including contractile elements, sarcomeric skeleton and the cytoskeleton, membrane-related proteins and proteins of the intercalated disc in addition to changes of the extracellular matrix. Furthermore, we will discuss the role of myocyte death, either autophagic or oncotic but less apoptotic and of inflammation. The structural correlate of diastolic dysfunction is myocyte hypertrophy and fibrosis. Additional myocyte degeneration results in systolic dysfunction, progression of the disease finally ends in heart failure. It is concluded that the development of heart failure is a multifactorial event involving all cellular components of the myocytes and the extracellular matrix. It is postulated that each structural abnormality is characterized by specific functional disturbances.

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