

## **Myocyte cell loss and myocyte hypertrophy in the aging rat heart**

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To determine the effects of age on the myocardium [heart muscle], the functional and structural characteristics of the heart were studied in rats at 3, 10 to 12 and 19 to 21 months of age. Systemic arterial pressure, left ventricular pressure and its first derivative (dP/dt) and heart rate were comparable in the three animal groups. In the interval between 3 and 10 to 12 months, mean myocyte [muscle cell] cell volume per nucleus increased 53% and 26% in the left and the right ventricle, respectively. The total number of myocyte nuclei remained constant in either ventricle. In the following period, between 10 to 12 and 19 to 21 months, a 39% further cellular hypertrophy on the left side of the heart was found in association with an 18% loss of cells in the ventricle. Cell loss was accompanied by discrete areas of interstitial and replacement fibrosis in the subendocardium [The layer of loose connective tissue that joins the endocardium (inner lining) and myocardium]. In contrast, no myocardial damage was observed in the right ventricle, and the measured 35% additional enlargement of myocytes occurred without a change in cell number. Thus, the aging left ventricle is composed of a smaller number of hypertrophied cells. Cellular hypertrophy may explain the unaltered cardiac function of the aged myocardium.

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