Images in Cellular / Molecular Medicine

Endothelial cell mitosis in experimental heart hypertrophy

Three groups of Wistar rats were subjected to swimming exercise for 1 h each day, 6 days per week. After 4 weeks of exercise, rats were killed and hearts, rendered hypertrophic by swimming exercise, were dissected and studied. Histoautoradiographic investigation suggested a highly significant proliferation of capillary wall cells in these hearts. A thorough ultrastructural investigation of the myocardium showed clear evidence of capillary neo-

formation. The growing capillaries first appeared as solid cords of pericyte-like cells in the interstitium. In the central area of these cords there were clefts lined by endothelial-like cells containing pinocytotic vesicles. These cells might be either transformed pericytes or, more probably, the result of endothelial proliferation. Such a mitotic endothelial cell, most probably in prophase, is shown in the center of the picture.

MC - myocardial cells; L - capillary lumen; RBC - red blood cell; arrows - small parts of the disorganised nuclear envelope; Ch - bulks of decondensed chromatin; m - mitochondria.
Rat heart. (x 20000).

Keywords: cardiac hypertrophy • neocapillary • endothelial cell proliferation • mitosis

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