Adrenomedullin expression is up-regulated by ischemia-reperfusion in the cerebral cortex of the adult rat.


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Changes in the pattern of adrenomedullin expression in the rat cerebral cortex after ischemia-reperfusion were studied by light and electron microscopic immunohistochecmistry using a specific antibody against human adrenomedullin (22-52). Animals were subjected to 30 min of oxygen and glucose deprivation in a perfusion model simulating global cerebral ischemia, and the cerebral cortex was studied after 0, 2, 4, 6, 8, 10 or 12 h of reperfusion. Adrenomedullin immunoreactivity was elevated in certain neuronal structures after 6-12 h of reperfusion as compared with controls. Under these conditions, numerous large pyramidal neurons and some small neurons were intensely stained in all cortical layers. The number of immunoreactive pre- and post-synaptic structures increased with the reperfusion time. Neurons immunoreactive for adrenomedullin presented a normal morphology whereas non-immunoreactive neurons were clearly damaged, suggesting a potential ceil-specific protective role for adrenomedullin. The number and intensity of immunoreactive endothelial cells were also progressively elevated as the reperfusion time increased. In addition, the perivascular processes of glial cells and/or pericytes followed a similar pattern, suggesting that adrenomedullin may act as a vasodilator in the cerebrocortical circulation. In summary, adrenomedullin expression is elevated after the ischemic insult and seems to be part of CNS response mechanism to hypoxic injury.

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