Institute of Experimental Morphology, Pathology and Anthropology with Museum
Bulgarian Anatomical Society

Acta morphologica et anthropologica, 23
Sofia ● 2016

CGRP- and VIP-Immunoreactivity in the Rat Carotid Body

D. Atanasova[1,2], N. Dimitrov[2], A. Dandov[3], N. Lazarov[1,3]

[1]*Institute of Neurobiology, Bulgarian Academy of Sciences, Sofia, Bulgaria*
[2]*Department of Anatomy, Faculty of Medicine, Trakia University, Stara Zagora, Bulgaria*
[3]*Department of Anatomy and Histology, Medical University of Sofia, Sofia, Bulgaria*

The carotid body (CB), the primary peripheral chemoreceptor in mammals, is a mass of vascular tissue located near the bifurcations of the carotid arteries. It registers changes in the oxygen concentration of arterial blood and helps to control respiratory activity. The most striking anatomical features of the CB are its rich vascularization and dense innervation. At a light microscopical level using immunohistochemistry we identified the localization and distribution of calcitonin gene-related peptide (CGRP) and vasoactive intestinal peptide (VIP)-containing nerve structures in the CB of rats. Both investigated vasoactive neuropeptides were expressed, although in a different manner, in periglomerular and intraglomerular nerve fibers which innervate blood vessels. Moreover, we observed strong VIP-like immunoreactivity not only in nerve fibers but also in the glomus cells. Our data provide immunohistochemical proof that the rat CB uses perivascular neuropeptides, which probably manage chemosensory activity through their actions on the vessels and neuron-like glomus cells.

Key words: carotid body, CGRP, VIP, immunohistochemistry, chemosensitivity.