

I. THE IMMUNOHISTOCHEMICAL STUDY: TOPOGRAPHY OF THE CARDIAC NERVE PLEXUS ON THE RABBIT HEART BASE

Ligita Gukauskienė

Institute of Anatomy, Faculty of Medicine, Lithuanian University of Health Sciences

A. Mickevičiaus 9, Kaunas LT-44307, Lithuania

e-mail: ligitagu123@gmail.com; Mobile: + 370 689 45 927

Abstract. The purpose of this study was to investigate the neurotopography of the cardiac ganglionated nerve plexus in the whole-mount preparations of the rabbit atria, because the intrinsic cardiac nervous system of the rabbit has not been investigated so far. The cardiac nerve structures were revealed by the immunofluorescence labelling for the general neuronal marker PGP 9.5 and the substance P (SP) in whole-mount atrial preparations derived from 8 young rabbits. The majority of rabbit intrinsic cardiac neurons (ICNs) were concentrated within three large ganglia containing up to several hundred neurons. In all examined hearts, the total number of the ICNs ranged from 1254 to 2614. The differences between the average of the neuron number of the right and left ganglion clusters were statistically significant at $P < 0.05$. The ganglia interconnected by commissural nerves into the continuous ganglionated nerve plexus on the heart base that encircled the roots of the pulmonary veins (PVs). The somata of the ICNs displayed the immunoreactivity for PGP 9.5. The SP was not observed in the somata of the ICNs. The SP-IR fibres with varicose nerve terminals passed closely to the ICNs but never formed the pericellular baskets around the neuronal somata. The extrinsic cardiac nerves entered the heart base were at the bifurcation of the pulmonary trunk and spread in the left atrium as well as proceeded on the heart base toward the large intrinsic ganglia and on the epicardium towards the root of the right cranial vein (RCV). The SP-IR nerve fibres with numerous varicosities were abundant within nerve bundles. In conclusion, the topography of the cardiac nerve ganglionated plexus of the rabbit heart base corresponds rather well to the rat and the mouse.

Keywords: intrinsic cardiac neurons, rabbit, PGP 9.5, cardiac nerves, substance P