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JOURNAL ARTICLE

Peptidergic innervation of blood vessels and interstitial cells in the testis of the cat

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We studied the innervation of the cat testis using a panel of antisera against the following neuronal markers: protein gene product 9.5 (PGP), neuropeptide Y, C-terminal peptide of neuropeptide Y, galanin, vasoactive intestinal peptide (VIP), calcitonin gene-related peptide, and substance P. Immunoreactivity against PGP, a general neuronal label, demonstrated the arrangement of fibers from the superior spermatic nerve (SSN) in the testicular pedicle and the cephalic testicular pole, and those of the inferior spermatic nerve (ISN) along the vas deferens and the inferior testicular ligament. The testicular parenchyma exhibited a very rich innervation, mainly distributed to blood vessels and Leydig cell nests, but also in close association with seminiferous tubules. Numerous peptidergic fibers were present in the SSN and ISN, albeit in different proportions. Thus, VIP-immunoreactive fibers were almost absent in the SSN, but were the most abundant subpopulation of the ISN. The testicular interstitium contained numerous peptidergic fibers, associated with blood vessels, interstitial Leydig cells, and seminiferous tubules. Similar fibers were related to the rete testis. Parenchymatous VIP-immunoreactive nerves disappeared after bilateral vasectomy. Stimulation of the ISN under experimental conditions was associated with an increase of blood flow, and induced a large release of VIP into the spermatic vein. The extensive and selective distribution of nerve fibers within the cat testicular parenchyma supports the importance of spermatic nerves for testicular function. Furthermore, the differences in the fiber composition of the SSN and ISN can be correlated with their opposing effects on testosterone secretion and testicular blood flow.

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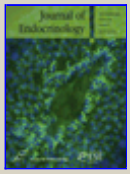

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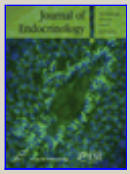

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