

Morphological changes of calcitonin gene related peptide (CGRP) –immunoreactive nerve fibers in the pineal gland of the golden hamster following the bilateral/unilateral superior cervical ganglionectomy

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Chronic changes in the content of calcitonin gene related peptide (CGRP) in the pineal gland of the golden hamster were examined after bilateral/unilateral transection of the superior cervical ganglion. CGRP-immunoreactive (CGRP-IR) fibers of the pineal gland were increased in hamsters of either bilateral or unilateral superior cervical ganglionectomy. In the intact hamster, about 11.6% and 16.3% of examined areas were CGRP-IR nerve fibers in the superficial pineal gland (SP) and deep pineal gland (DP), respectively. These fibers visualized by retrograde tracer were originated from the trigeminal ganglion. In bilateral ganglionectomized hamsters, CGRP-IR profiles were increased in the superficial pineal gland (28.3%) and deep pineal gland (27.9%) after one-week post-ganglionectomy. The number of increased immunoreactive fibers reached the maximum at 10 weeks after bilateral ganglionectomy and remained at the end of the experimental period (20 weeks post-ganglionectomy). As compared with those of the intact hamster, CGRP-IR profiles were not significantly influenced during the first three weeks of unilateral superior cervical ganglionectomy, but elevated to approximately 30% in both superficial and deep pineal glands during 10~20 weeks post-ganglionectomy. The present results provided evidences that both unilateral and bilateral sympathectomy could resulted in an increased nerve fibers containing CGRP in the pineal, which may be due to the sprouting of such fibers in response to deprivation of sympathetic influence.