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Calcitonin gene-related peptide in temporomandibular inflammation

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To investigate changes in calcitonin gene-related peptide (CGRP)-like immunoreactivity (CGRP-LI) in the rat masseter muscle and brain after the unilateral experimental induction of masseter myositis. Ipsilateral and contralateral changes of the CGRP were examined in rat masseter muscle after the induction of unilateral myositis on the right side with an intramuscular injection of 0.01 mL Freund's adjuvant. The left masseter, and left and right masseters of control rats, was injected with 0.01 mL saline (0.9%). After 21 days, tissue samples from the masseter muscles and the hypothalamic-pituitary-adrenal (HPA) axis were analysed for the presence of CGRP by immunohistochemistry, radioactive immunoassay, and high-performance liquid chromatography. Haematoxylin-eosin staining was used to confirm an inflammation in the masseter muscles. Elevated CGRP-LI was detected bilaterally in the masseter muscles ($P < .001$) in the myositis group. CGRP-immunoreactive nerve fibres were mainly detected in close proximity to muscle cells and in the walls of the blood vessels. Compared to the control rats, a significant difference in scratching behaviour was seen in the myositis group from day 9 until day21. In the myositis group, CGRP-LI was increased in the pituitary gland concomitant with the increase in CGRP-LI in the masseter muscles but was decreased in the hypothalamus. A possible explanation for these changes could be that rats with chronic myositis develop an abnormal function of the HPA axis triggered by masseter muscle inflammation. The results of this study demonstrate that CGRP may play an important role both peripherally and centrally in masseter muscle myositis in association with presumed nociceptive behaviour.

Biography

Waldemarson DDS PhD DMD has done research since 1994, started at the Karolinska Institute, and then continued at the Semmelweis Egyetem. Waldemarson has published 11 papers and has about 9 more abstracts from different conferences. Waldemarson is CEO for Waldemarson KATA in Hungary and works a Dental Surgeon in Budapest.