Occipital nerve and SSS converge in cat cervical cord

The Angus-Leppan et al. study in this issue has been designed to verify convergence from superior sagittal sinus (SSS), ipsilateral occipital nerve (ON) and skin on single units in the dorsolateral area (DLA) of the cat spinal cord. Evidence exists that cells in the DLA influence or are part of trigemino-cervical relay. In two-thirds of animals studied, convergence was demonstrated in DLA units from ON and SSS.

Discussion focuses on the relevance of such trigeminal and occipital nerves at C2 levels to headaches and provides clues for explaining some clinical features of human pain disturbances of the head and neck. As authors report from the clinical literature, periorbital pain is referred following stimulation of cervical roots. Also, the latest proposed clinical entity—cervicogenic headache—is described as neckache radiating to the frontal area.

Authors are cautious in taking their own data concerning animal experimental conditions as reflecting human pain pathway function. However, they also describe functional results from other experimental procedures previously reported, namely c-fos expression in the medulla and spinal cord of the cat, following SSS stimulation. Also, many reports exist regarding an increase of CGRP following trigeminal system stimulation, whereas CGRP level in the jugular blood of the rat is decreased following greater occipital nerve stimulation (Vincent MB et al., Cephalalgia 1992;12:275–9). Neuropeptide release from sensory fibers (i.e., trigeminal) has been used in several experimental animal models as a marker to demonstrate activation of the trigemino-vascular system and to observe its inhibition by the administration of antimigraine drugs. Decrease of CGRP level following greater occipital nerve stimulation in the rat may represent a marker for inhibition of the modulatory role of cervical afferents on the nociceptive pathway. The neurophysiological data reported by Angus-Leppan and co-workers in this paper deserve attention as they provide a possible locus where this modulation may occur.

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