

Arginine vasopressin immunoreactivity is decreased in the hypothalamic suprachiasmatic nucleus of subjects with suprasellar tumors.

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Research question and background

Suprasellar tumors with compression of the optic chiasm are associated with an impaired sleep-wake rhythm. We hypothesized that this reflects a disorder of the biological clock of the human brain, the suprachiasmatic nucleus (SCN), which is located just above the optic chiasm.

Methods and tissues used

In order to test this hypothesis, we investigated the expression of two key neuropeptides of the SCN, that is, arginine vasopressin (AVP) and vasoactive intestinal peptide (VIP), as assessed by quantitative immunocytochemistry in post-mortem hypothalamic tissue of patients with a suprasellar tumor inducing permanent visual field defects. Post-mortem hypothalamic tissue of 5 patients with a suprasellar tumor inducing permanent visual field defects (acromegaly n = 2, nonfunctioning macro-adenoma n = 1, macroprolactinoma n = 1, infundibular metastasis of a colorectal adenocarcinoma n = 1) and 15 age- and gender-matched controls was obtained from the Netherlands Brain Bank.

Results and conclusion

Total AVP immunoreactivity in the SCN was lower in patients with a suprasellar tumor than in controls (P = 0.03). By contrast, total VIP immunoreactivity was not different between patients and controls (P = 0.44). Suprasellar tumors leading to permanent visual field defects are associated with reduced AVP, but not VIP immunoreactivity, in the SCN. These findings raise the possibility that selective impairment of the SCN contributes to sleep-wake disturbances in these patients. © 2012 International Society of Neuropathology. PMID: 23278971 [PubMed - indexed for MEDLINE]