

Abstract

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Reduction in hypothalamic 1H-MRS metabolite ratios in patients with cluster headache.

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OBJECTIVE: To determine the 1H-MR spectroscopic (MRS) findings in the hypothalamus in patients with episodic cluster headache.

METHODS: 47 patients were recruited with episodic cluster headache (35 in cluster period and 12 in remission), 21 normal controls, and 16 patients with chronic migraine. The hypothalamic 1H-MRS metabolite ratio changes in patients with cluster headache were evaluated and compared with results in the normal controls as well as patients with chronic migraine. Seven patients in the cluster period group underwent a follow up hypothalamic MRS study five to six months after remission.

RESULTS: In patients with cluster headache, the hypothalamic N-acetylaspartate (NAA)/creatinine (Cr) and choline (Cho)/Cr ratios were similar between those in cluster period and in remission. As a group, both NAA/Cr and Cho/Cr levels were significantly lower in patients with cluster headache in comparison with either the control or chronic migraine groups. In those with a follow up MRS study, the levels of metabolite ratios did not differ between the cluster and remission periods.

CONCLUSIONS: This study provides evidence of persistent biochemical change of the hypothalamus in patients with episodic cluster headache. Low levels of NAA/Cr and Cho/Cr suggest that cluster headache might be related to both neuronal dysfunction and changes in the membrane lipids in the hypothalamus.

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