

Abstract

Headache. 2003 May;43(5):490-5.

Carnitine palmitoyltransferase II (CPT2) deficiency and migraine headache: two case reports.

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BACKGROUND: Migraine headache is common and has multiple etiologies. A number of mitochondrial anomalies have been described for migraine, and mitochondrial dysfunction has been implicated as one potential pathophysiological mechanism. Carnitine is used by mitochondria for fatty acid transportation; its deficiency, however, has not been implicated in migraine pathophysiology.

METHODS AND RESULTS: Two adolescent girls presented to the Headache Center at Cincinnati Children's Hospital Medical Center with frequent headaches and were diagnosed with migraine by the International Headache Society (IHS) criteria. Both girls had a history of recurrent fatigue, muscle cramps, and multiple side effects from their prophylactic treatment. Carnitine levels were measured and found to be low. Carnitine supplementation was initiated. Both patients had a reduction in headache frequency, as well as an improvement in their associated symptoms and other complaints. A skin and muscle biopsy obtained from one patient revealed a partial carnitine palmitoyltransferase II deficiency in the muscle only.

CONCLUSIONS: Carnitine palmitoyltransferase II deficiency may represent another etiology for migraine headache, and may be useful in further defining the pathophysiology of migraine. When properly recognized, supplementation with carnitine may improve the outcome of the migraine as well as the carnitine-associated symptoms.

PMID: 12752755

