

## Migraine And Magnesium Deficiency

A number of studies have been done on the relationship between magnesium deficiency and migraine. Some excerpts from Medline abstracts are listed below:

Mauskop A, Altura BM; Role of magnesium in the pathogenesis and treatment of migraines Clin Neurosci 1998;5(1):24-7

The importance of magnesium in the pathogenesis of migraine headaches is clearly established by a large number of clinical and experimental studies. However, the precise role of various effects of low magnesium levels in the development of migraines remains to be discovered. Magnesium concentration has an effect on serotonin receptors, nitric oxide synthesis and release, NMDA receptors, and a variety of other migraine related receptors and neurotransmitters. The available evidence suggests that up to 50% of patients during an acute migraine attack have lowered levels of ionized magnesium. Infusion of magnesium results in a rapid and sustained relief of an acute migraine in such patients. Two double-blind studies suggest that chronic oral magnesium supplementation may also reduce the frequency of migraine headaches. Because of an excellent safety profile and low cost we feel that a trial of oral magnesium supplementation can be recommended to a majority of migraine sufferers.

Mishima K, Takeshima T, Shimomura T, Kitano A, Takahashi K, Nakashima K, Okada H; Platelet ionized magnesium, cyclic AMP, and cyclic GMP levels in migraine and tension-type headache; Headache 1997 Oct;37(9):561-4

Decreased serum and intracellular levels of magnesium have been reported in patients with migraine. It has been suggested that magnesium may play an important role in the attacks and pathogenesis of headaches. It is suggested that reduced platelet ionized magnesium in patients with tension-type headache is related to abnormal platelet function, and that increased platelet cyclic AMP in patients with migraine is related to alteration of neurotransmitters in the platelet.

Aloisi P, Marrelli A, Porto C, Tozzi E, Cerone G; Visual evoked potentials and serum magnesium levels in juvenile migraine patients; Headache 1997 Jun;37(6):383-5.

An inverse correlation between increased P100 amplitude and lowered serum magnesium levels was found in children suffering from migraine with and without aura in a headache-free period.

Gallai V, Sarchielli P, Morucci P, Abbritti G; Magnesium content of mononuclear blood cells in migraine patients; Headache 1994 Mar;34(3):160-5.

The migraine patients studied had a reduced mononuclear magnesium content compared to age-matched healthy control subjects. The authors say that the lower magnesium content in mononuclear cells could indirectly indicate the reduction of brain magnesium concentration, which has recently been demonstrated in the course of migraine.

Gallai V, Sarchielli P, Morucci P, Abbritti G; Red blood cell magnesium levels in migraine patients; Cephalalgia 1993 Apr;13(2):94-81; discussion 73

The authors believe that low red blood cell magnesium levels could be a peripheral expression of the reduced brain

magnesium concentration observed in migraine patients.

Gallai V, Sarchielli P, Coata G, Firenze C, Morucci P, Abbritti G; Serum and salivary magnesium levels in migraine: Results in a group of juvenile patients; *Headache* 1992 Mar;32(3):132-5

"In the last few years a fundamental role for magnesium in establishing the threshold for migraine attacks and involvement in the pathophysiologic mechanisms related to its onset has become evident. In comparison with normal subjects, migraine patients had lower levels of serum and salivary magnesium interictally. Serum magnesium levels tended to be further reduced during attacks (which) could be an expression, at the peripheral level, of reduced cerebral magnesium levels which would contribute, at least in part, to defining the threshold for migraine attacks."

Sarchielli P, Coata G, Firenze, Morucci P, Abbritti G, Gallai V; Serum and salivary magnesium levels in migraine and tension-type headache. Results in a group of adult patients. *Cephalalgia* 1992 Feb;12(1):21-7.

The authors state that serum magnesium levels and to a lesser extent salivary magnesium levels might express indirectly the lowering of brain extracellular magnesium concentration which occurs in migraine patients.

Taubert K; [Magnesium in migraine. Results of a multicenter pilot study]; *Fortschr Med* 1994 Aug 30;112(24):328-30.

The hypothesis that magnesium may be useful in the prevention of migraine attacks has been confirmed by this pilot study. Further studies are in preparation.

Welch KM, Barkley GL, Tepley N, Ramadan NM; Central neurogenic mechanisms of migraine; *Neurology* 1993 Jun;43(6 Suppl 3):S21-5.

This study indicates that low intracellular brain magnesium concentration may be the link between the physiologic threshold for migraine and the attack itself.