www.medscape.com

Migraine Attacks Shortened by Diamine Oxidase Supplements

Daniel M. Keller, PhD | Oct 01, 2013

VIENNA, Austria — Preventive treatment with diamine oxidase (DAO), an enzyme that degrades histamine, significantly shortened the duration of migraine attacks and trended toward reducing the number of episodes.

Histamine is present in many foods, is released in allergic reactions, and is one of the chemical mediators that contributes to migraine. About 25% of the population may have an alteration in DAO that decreases its activity in breaking down histamine. The enzyme is expressed most in the intestine, kidney, and placenta.

"We diagnosed 137 patients who have a migraine, of whom 119 showed deficits of the activity of the enzyme, around 87% of the total patients that we have studied," said Joan Izquierdo, MD, from the Faculty of Health Sciences at the International University of Catalonia and the neurology service at Catalonia General Hospital in Barcelona, Spain.

He said normal enzyme activity is a score of at least 80 histamine-degrading units [HDU]/mL.

In a survey administered in 2006 and again in 2012, symptom scores correlated with enzyme activity. Symptom scores rose progressively as enzyme activity dropped below 80 HDU/mL, with scores 50% to 120% higher in the 30-40 HDU/mL range compared with enzyme activity >80 HDU/mL.

Speaking here at the XXI World Congress of Neurology (WCN), Dr. Izquierdo presented the results of his single-center, double-blind, placebo-controlled trial of DAO oral supplementation, called MIGRADAO 002, as a preventive treatment in patients with DAO activity less than 80 HDU/mL and episodic migraine with or without aura, diagnosed according to the criteria of the International Headache Society.

Participants were men or women age 18 to 60 years old with an attack within the previous 6 months. Most of the patients were women, with only 8 men in each group. The placebo and medication groups were well matched for median age (approximately 40 years) and age range (18 to 65 years).

Major exclusions were alcoholism, psychiatric disorders, or a diagnosis of any disorder for which a treatment could be used as migraine prevention in the previous 1 month. People with religious convictions prohibiting the consumption of pork products were also excluded because of the porcine origin of the DAO supplement.

Patients recorded baseline data for 1 month using a 10-point scale (0 = no pain; 10 = worst pain possible). Then each patient received medication (n = 50) or placebo (n = 49). The supplement contained 4.2 mg of a 7% solution of DAO. Dr. Izquierdo said the supplement is considered a dietary food with special medical uses.

Participants took 2 capsules with a glass of water before breakfast, lunch, and dinner. They then recorded treatment data for 1 month, at which time they returned the diaries and packaging to the researchers, who did a pill count to check for adherence.

The medication was associated with a similar reduction in the mean number of attacks per month in the placebo and DAO groups, as calculated from the randomization to the final visit (–1.8 and –2.1, respectively). However, "the reduction was around 30% in the duration of the crisis [attack] of pain," Dr. Izquierdo reported.

Table. Effect of Diamine Oxidase Supplementation on Duration of Migraine Attacks

Period	Diamine Oxidase (n = 50)	Placebo (n = 48)	*P* Value
At randomization	7.1 ± 9.9	6.5 ± 2.8	.374
Final visit	5.1 ± 3.5	6.3 ± 3.3	.03

Values are the mean number of hours ± standard deviation.

Patients did not differ much in their report of pain intensity during an attack. Mean pain scores were in the 5.3 to 5.7 range whether at the time of randomization or at the final visit and between the DAO and the placebo groups. Dr. Izquierdo said that patients often report pain as a score of 4 to 6, but possibly they are used to having pain so do not rate it higher.

A better indicator of pain may be the use of triptan drugs. "And in this way we find that the group treated with enzyme has an important and significant difference in the consumption of triptans," he said. The placebo group consumed 20% more triptans by the end of the trial vs baseline compared with a 20% reduction in triptan use among the DAO group ($P < .022$).

All but 2 participants completed the trial, and no adverse events were seen in either group.

Dr. Izquierdo concluded that there is a high prevalence of DAO deficit in patients with migraine. "Diamine oxidase supplementation has shown a significant reduction in crisis duration and a tendency toward a reduction in number of crises," he said. "The treatment is [safe] because we don't have any adverse events."

The diminished triptan use among patients receiving DAO suggests that the compound may have also reduced the intensity of pain during an attack, the researchers suggest.

Asked for a comment on the study, session moderator Gülden Akdal, MD, from the Department of Neurology at Dokuz Eylül University Faculty of Medicine in Izmir, Turkey, told *Medscape Medical News*, that this work addresses a logical new approach to managing this condition.

The 2 main limitations that Dr. Akdal sees are the small size of the study and its single-center nature focusing on a very regional population. Most of the patients in the study were deficient in DAO, but she cautioned, "this is Spanish data so we could have gender and genetic differences."

She noted that the data were from Catalonia and that the results may not even be generalizable to all of Spain, so broader investigations are warranted, including more study participants, more diverse populations, and patients with migraine with and without aura.

She said the current drugs for migraine treatment all have adverse effects, so the best approach is always to take time with patients to make them aware of migraine triggers, whether they are foods, drink, lack of sleep, hunger, or environmental factors.

The study was funded by DR Healthcare España SL. Dr. Izquierdo and Dr. Akdal have disclosed no relevant financial relationships.

XXI World Congress of Neurology (WCN). Free Papers Session 4. Presented September 22, 2013.

Send comments and news tips to news@medscape.net.

Cite this article: Migraine Attacks Shortened by Diamine Oxidase Supplements. *Medscape*. Oct 01, 2013.