

Migraine: The Basics

WHAT IS MIGRAINE?

Migraine is a disabling neurologic condition defined by intense head pain that may occur with other symptoms such as nausea, vomiting, or sensitivity to light, sound, and smells. In many people, a throbbing pain is felt only on one side of the head. Some people have warning symptoms, called an aura, which may include flashing lights, zigzag lines, or temporary vision loss, before the headache begins, or experience weakness and impairments in sensation and speech. Stress, hormonal changes, bright or flashing lights, lack of sleep, and certain foods can trigger recurring attacks.

HOW COMMON IS IT?

Migraine affects more than 10 percent of people worldwide and is three times more common in women than in men.

WHAT CAUSES IT?

Experimental evidence suggests migraine may be associated with the activation and sensitization of parts of the brain known as the trigeminovascular system, which consists of connections between nerve cells and cerebral blood vessels. In addition, increased levels of a peptide, calcitonin gene-related peptide (CGRP), have been reported in migraine disorders. Migraine in some women may relate to changes in hormones during their menstrual cycle.

HOW IS IT TREATED?

Drug treatments include acute medications, used to treat pain at the earliest onset of symptoms; preventive medications, taken regularly to reduce the frequency of attacks; and preemptive treatments, taken briefly to prevent imminent attacks. Acute medications include analgesics, which ease the pain, and abortive medications, which are designed to stop a headache before it starts.

Narcotics, such as codeine and meperidine (Demerol), are also sometimes prescribed for migraine but should not be used initially because of a potential for addiction, medication overuse, and aggravation of migraine.

Abortive medications are thought to work directly on certain migraine pathways and contain triptans, drugs that may constrict blood vessels and are therefore contraindicated in vascular disease.

Preventive medications include calcium channel blockers and beta-blockers, which are both blood-pressure drugs. Propranolol (Inderal) and timolol (Blocadren) are beta-blockers that have been approved specifically for migraine prevention by the US Food and Drug Administration (FDA). Antidepressant medications are also sometimes prescribed as preventive medications. Two antiepileptic drugs—divalproex sodium (Depakote) and topiramate (Topamax)—have been approved by the FDA for migraine prevention. The FDA has also approved two external devices that stimulate the brain or nerves of the head and face using electrical or magnetic pulses—the transcranial magnetic stimulator (TMS) and the Cefaly headband—and the anesthetic bupivacaine. For the treatment of chronic migraine, diagnosed as more than 15 headache days per month over three months, the FDA has approved botulinum toxin type A (Botox) for injection into the forehead, the back of the head, and the shoulders.

WHAT RESEARCH IS BEING DONE?

The National Institute of Neurological Disorders and Stroke (ninds.nih.gov) supports research, including the search for genetic mutations that might contribute to migraine. For example, in 2010, a team of researchers found a common mutation in the gene TRESK, which contains instructions for a potassium channel. Potassium channels are important for keeping a nerve cell at rest. Mutations in these channels can lead to overactive cells that respond to much lower levels of pain. Large genetic analyses similar to the one used to identify TRESK will most likely lead to the identification of a number of other genes linked to migraine. Several large population-based genome studies have revealed single nucleotide polymorphisms (SNPs) that might be relevant for migraine.

For more *Neurology Now* articles on migraine, go to bit.ly/NN-Migraine.

For resources and support, contact:

- ▶ American Migraine Foundation: americanmigrainefoundation.org; 856-423-0043
- ▶ Migraine Research Foundation: migraineresearchfoundation.org; 212-249-5402
- ▶ National Headache Foundation: headaches.org; 888-NHF-5552 (888-643-5552)

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