

The Medical Minute: Migraines

June 20 2007

What do lightning bolts, numb arms, grumpy moods, missed parties and nightmare headaches have in common? These all represent experiences of many migraine sufferers ("migraineurs"). An estimated 28 million U.S. citizens suffer with this odd condition. The World Health Organization lists migraine as one of the leading causes of people living with disability.

Current understanding of migraine pathophysiology suggests that this is a much more complex syndrome than what was appreciated years ago. Many migraineurs inherited a genetic tendency for these attacks. Migraines involve a triggering of an electrical phenomenon on the surface of the brain (spreading depression) and interaction with deep-pain modulating structures of the brain (brainstem).

In addition there is a back-and-forth communication between these brainstem areas and the surface blood vessels via the trigeminal nerves. Ultimately the surface blood vessels stretch open (dilate) and develop a surrounding inflammation (increased permeability and neurovascular inflammation). If the process is left unchecked, the nerves eventually take on a life of their own, firing and continuing the irritation without need for a trigger (sensitization).

The pain phase of migraine is well understood. Pain is typically moderate to severe in intensity, but can be excruciating and incapacitating. Untreated, the pain phase will last four to 72 hours. Approximately 15 to 20 percent of folks will have a warning phase (aura) early in the attack. Auras are most commonly a visual disturbance,

but could alternatively be an odd change in sensation, balance, strength or speech. Other phases include less well-defined prodrome phase and postdrome phase, occurring before and after pain. These phases are variable but can include nausea, food craving, agitation, diarrhea and behavioral change, among other things.

So, what can be done about it? Most important is self-education. There are many excellent books on the market, as well as some free Web sites: American Headache Society at www.achenet.org/ and National Headache Foundation at www.headaches.org/ online).

Lifestyle modification is key to success for controlling attacks. This involves awareness and attention to dietary, activity, hormonal, weather, sleep, stress and sensory stimuli that can trigger an attack.

Those suffering with frequent migraines (more than three attacks per month) should consider preventative intervention. Prevention usually takes the form of physical modalities and/or prescription medication. The FDA has approved four medications available in the United States. There are many more that have been recognized as helpful as referenced in journal articles: *Neurology*, 2000; 55:754-762 and *Neurology*, April 8, 2003; Vol 60, No 7, S 21.

"Attack treatment" is what many people focus on most. These are the medications that can be taken at the earliest onset of a migraine attack to arrest the evolution of the electrical/vascular cascade and to avoid the sensitization. These treatments are most successful when utilized as part of a three-part triangle of migraine management (lifestyle modification, prevention treatment and attack treatment). Currently, a handful of over-the-counter medications that have shown benefit for mild migraine (Naprosyn, ibuprofen, aspirin, aspirin-acetaminophen-caffeine combination pills). For more severe attacks, medications in the triptan family are the mainstay of treatment (eletriptan, sumatriptan, rizatriptan,

almotriptan, zolmitriptan, frovatriptan and naratriptan).

Millions of migraineurs already have benefited from our advanced understanding and treatments for this disorder. Research in migraine pathophysiology, genetics and imaging continues to broaden treatment and will lead to additional novel treatments for these attacks.

"You have spent your life in trying to discover the North Pole, which nobody on earth cares tuppence about, and you have never attempted to discover a cure for the headache, which every living person is crying aloud for."

-- George Bernard Shaw to the arctic explorer Friedjof Nansen.
(as quoted in "Headache Through the Ages" by Seymour Diamond, Mary A. Franklin; Professional Communications Inc. Aug. 5, 2005)

The discovery continues.

Source: By Stephen Ross, Penn State

Citation: The Medical Minute: Migraines (2007, June 20) retrieved 17 April 2024 from <https://medicalxpress.com/news/2007-06-medical-minute-migraines.html>

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