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Migraines & Headaches Health Center

Migraine Sufferers Have Different Brains

Section of Brain That Processes Pain Thicker in Migraine Sufferers

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WebMD Medical News

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Nov. 19, 2007 -- Researchers have identified specific differences in the brains of migraine sufferers linked to the processing of sensory information, including [pain](#).

In earlier research, Harvard Medical School investigators used [magnetic resonance imaging](#) (MRI) to show structural differences between the brains of people with and without migraines.

Specifically, the imaging showed thickening in a specific area of the brain related to the communication of sensory processing called the somatosensory cortex (SSC).

It is not clear if migraines cause the brain changes or if the brain differences cause migraines, researcher Nouchine Hadjikhani, MD, of the Martinos Center for Biomedical Imaging at Massachusetts General Hospital tells WebMD.

"That is the big question," she says. "A person could be born with these cortical differences, making them susceptible to migraines later in life. But we just don't know."

Migraines and the Brain

In the newly reported imaging study, researchers compared the brains of 24 people with migraines and 12 people without them. They found that the SSC was an average of 21% thicker in migraine sufferers. The thickness changes were especially pronounced in the part of the SSC related to sensation of the head and face.

Most study participants with migraines had experienced the severe [headaches](#) since childhood, suggesting that long-term stimulation of this sensory area of the brain could lead to structural changes, Hadjikhani says.

The study is published in the Nov. 20 online issue of the journal *Neurology*.

Other studies have also shown differences in cortex thickness in patients with [multiple sclerosis](#) and Alzheimer's disease.

But it is also possible that the structural changes precede migraines and actually cause them to occur.

Hadjikhani and colleagues hope to shed light on this 'chicken and egg' conundrum in a much larger study.

Imaging studies on young children who are at high risk for having migraines later in life because their mother or father had them may also help answer the question of which comes first.

"If we already see these changes in children who have never had a headache in their life, that will tell us something," she says.

Whatever the outcome, it is increasingly clear that the brain's sensory processing center plays an important role in migraines.

Treat Migraines Aggressively

It is also now clear that the brains of migraine sufferers are different from those of people without the severe headaches.

In an unrelated study, researcher Mark C. Kruit, MD, and colleagues from Leiden University in the Netherlands identified tiny brain lesions in the brains of a significant percentage of migraine sufferers who underwent MRI.

[In an interview with WebMD in 2004](#), Kruit predicted that the imaging studies would "change the common perception that migraine is a trivial problem with only transient symptoms."

The studies also point to the importance of aggressively [treating migraines](#), Hadjikhani says, to both prevent the headaches from occurring and to manage the pain when they do occur.

She reasons that if frequent migraines cause structural damage to the brain, having fewer migraines and migraines with less intense pain may prevent this damage from happening.

"It is important not to let the pain get out of hand," she says.

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