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Migraine brains 'are different'

Scientists have discovered differences in the sensory areas of the brains of people who develop migraines.

Migraines can be debilitating

They found a part of the cortex is thicker than in people who are free from the debilitating headaches.

What is not clear is whether the difference causes, or is the result of migraine attacks.

The Neurology study, by Massachusetts General Hospital in Boston, suggests the changes may make patients hyper-sensitive to pain in general.

The researchers, from the hospital's Martinos Center for Biomedical Imaging, compared 24 people who get migraines with 12 who do not suffer the condition.

> **"Repeated migraine attacks may lead to, or be the result of, these structural changes in the brain"**
>
> Dr Nouchine Hadjikhani
> Massachusetts General Hospital

They found the somatosensory cortex area of the brain was up to 21% thicker in the migraine sufferers.

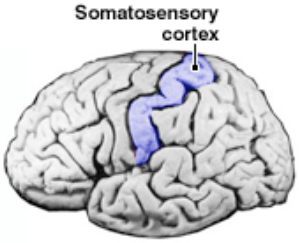
Over-stimulation

Lead researcher Dr Nouchine Hadjikhani said: "Repeated migraine attacks may lead to, or be the result of, these structural changes in the brain.

"Most of these people had been suffering from migraines since childhood, so the long-term over-stimulation of the sensory fields in the cortex could explain these changes.

"It's also possible that people who develop migraines are naturally more sensitive to stimulation."

HOW MIGRAINE BRAINS CHANGE



Migraine sufferers have been found to have a somatosensory cortex area up to 21% thicker than non-sufferers

Dr Hadjikhani said the results indicated that the brain's sensory mechanisms were important components in migraine.

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"This may explain why people with migraines often also have other pain disorders such as back pain, jaw pain, and other sensory problems such as allodynia, where the skin becomes so sensitive that even a gentle breeze can be painful."

She said that much effort was made to treat the symptoms of migraine, but it was possible that if the attacks could be prevented in the first place this would stop changes taking place in the brain - and prevent patients becoming hyper-sensitive to pain.

Drugs which have been shown to have some success in reducing the frequency and severity of migraine attacks include beta blockers, such as propranolol, and anti-depressants, such as amitryptyline.

Brain changes

Previous research has shown that the cortex becomes thinner with neurological disorders such as multiple sclerosis and Alzheimer's disease.

Part of the cortex, although not the somatosensory area, is also known to thicken with extensive motor training and learning.

Dr Andrew Dowson, medical advisor to the Migraine Action Association, said there was much international research currently under way using sophisticated imaging techniques to examine the impact of chronic pain on the central nervous system.

Evidence was emerging that it could lead to changes both in the connections made between brain cells, and in the hard-wiring of the brain.

"This study is with a small number of subjects but the findings might indicate an important result of or even cause of migraine.

"Who knows where this might lead with new diagnostic possibilities and therapeutic targets?"

Professor Peter Goadsby, of the University College London Institute of Neurology, said: "The new data provide further clear evidence that migraine is a brain disorder.

"The findings are consistent with a change in the way the brain handles information, such as pain signals or light or sound.

"These changes do not represent damage but probably an adaptation by the brain to the disorder."

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