Can Weather Pressure Changes Trigger Migraines?

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Weather Pressure and Migraines

Barometric pressure has been self-reported by people living with migraines to be an exacerbating and triggering factor in how frequently they experience an attack. However, few studies and reports are showing the correlation between changes in barometric pressure and the prevalence, intensity, and frequency of migraine. Here we examine any evidence of the relationship between weather pressure and migraines.

Generally, it's mechanism has been interpreted as follows: physical loading, attributed by atmospheric pressure to human bodies, compresses or dilates human blood vessels, which leads to abnormality in blood flow and induces a migraine. Some atmospheric and weather changes associated with headaches include a sudden increase or drop in temperature or humidity, extremely high or low temperature or humidity, storm and strong wind systems, and changes in altitude.

Research on the Weather Pressure and Migraine Relationship

Three studies done in Japan, where there are four seasons and as well as frequent typhoons and cyclones, found relevancy between changes in atmospheric pressure and migraine attacks. A study was conducted by the Department of Neurology at Dokkyo Medical University which showed that out of 28 patients, 18 associated weather change with migraine headache development with 14 of those reporting low barometric pressure to be a cause of migraine headache.

A case-crossover study of 7,054 patients seen in an emergency department between May 2000 and December 2007 with a primary discharge diagnosis of headache was performed where levels of temperature, barometric pressure, humidity, fine particulate matter, black carbon and nitrogen, and sulfur dioxides were compared. Results in terms of barometric pressure found that lower barometric pressure increased the risk of non-migraine cases 48-72 hours before hospitalization and that lower barometric pressure led to a brief increase in the risk of headache requiring emergency department evaluation.

The relationship between migraine attacks and barometric pressure changes were investigated in another study among 34 patients who received medical care at their hospital. Of the study population, 31 were female and three were male, 22 had migraine with aura (MA), 12 had migraine without aura (MOA), and a control group of 28 patients with tension-type headaches (TTH) was included. Results from the study showed that 72.7% of MA patients, 75% of MOA patients, and 21.4% of TTH patients developed migraine in association with atmospheric pressure decrease.

What Are the Symptoms of Migraine Triggered by Atmospheric Pressure Changes?

The symptoms of a migraine attack that is brought on by changes in atmospheric pressure are like what someone would experience during any other migraine attack. These would include:

- Head pain that lasts between three hours and four days
- Photophobia, phonophobia, and/or hypersomnia
- Nausea, vomiting, and/or abdominal pain
- Dizziness or light-headedness
- Mood changes
- Changes in vision
- Numbness, pressure or tightness in the face or neck
- Increased urination
- Frequent yawning
- Cognitive impairment
- Aura
- Slurred speech or aphasia
- Food cravings

How are Atmospheric Pressure Triggered Migraine Attacks Treated?

As with most migraine attacks, treatment can vary depending on severity, length, and frequency.

Over-the-counter medications such as NSAIDs (non-steroidal anti-inflammatory drugs), pain relievers, or medications specific to treating migraine can be used. If nausea and/or vomiting is a persistent symptom, anti-nausea medication may also be used. Topical analgesics, such as ointments, creams or sprays, can also be used to treat pain.

Medications can be prescribed to treat acute migraine attacks as they occur. These medications most commonly include:

- NSAIDs
- Triptans
- Ergotamines

It's important to take these medications at the onset of an attack to increase their efficacy and chances of aborting the migraine. You can also investigate using non-invasive non-medical devices to treat acute attacks. There are several on the market that are FDA approved for the use of treating and/or preventing migraine. They are the:

- CefalySpring TMS
- GammaCore

There are also ways in which you can treat an atmospheric pressure migraine at home as well. Common home remedies include:

- Applying ice packs, pads or wraps to the head and/or neck
- Deep breathing and meditation
- Using moist heat or taking a warm bath or shower
- Avoiding common triggers, such as food, alcohol, caffeine, and sugar
- Avoiding strenuous physical activity
- Relaxing and getting plenty of rest
- Staying away from over-stimulating areas (too bright or noisy)

Preventing Atmospheric Pressure Migraines

As with most prevention methods for treating migraine, these recommendations regarding weather pressure and migraines are similar and do not stray far from what most people living with migraines are already doing to live a more pain-free life. Things to do to help maintain a healthy, well-balanced lifestyle with migraine include:

- Sticking to a regular sleep schedule because sleep hygiene is important.

- Incorporating stress-relieving techniques into your routine, such as yoga or meditation.
- Staying hydrated. Drink half of your body weight of water in ounces each day.
- Avoiding alcohol, excess sugar and fats, and stimulants.
- Eating a balanced diet and not skipping meals.
- Exercising regularly. If exercise is a trigger, try doing something low-impact like walking, yoga, or swimming.
- Planning for downtime to help reduce the risk of stress and fatigue, which can exacerbate head pain during weather patterns that may trigger a migraine.
- Taking an NSAID medication during the 24-hour period when weather patterns or changes are due to occur.
- Using pressure filtering earplugs designed for shifts in weather pressure, such as WeatherX.
- Taking prescribed prevention medication to help lower the severity and frequency of an attack during changes in weather. These would include blood pressure medications, beta-blockers, calcium channel blockers, antidepressants, tricyclic antidepressants, SSRI/SSNRIs (Selective Serotonin Reuptake Inhibitors), anticonvulsants, serotonin antagonists, calcitonin gene-related peptide monoclonal antibodies (CGRPs), and onabotulinumtoxinA.