

S29 Unraveling the Mystery: Diagnosing Migraines with MRI Imaging

Objectives:

- Define what migraines are and how MRI is the best imaging scan to help rule out underlying causes of migraines.
- Describe how Migraines are then treated.



What is a Migraine?

A migraine is a type of headache that is intensified due to severe pain and/or a pulsing sensation. Additionally, a migraine differs from a regular headache as it can often be associated with symptoms of nausea, vomiting and a sensitivity to light or noise. Migraines are particularly bothersome as they can also last between hours or days and can limit daily activities due to the severity of the pain.

How Are Migraines Diagnosed?

To be diagnosed with migraines, a doctor may ask you a series of questions, followed by a neurological exam and even a physical exam. Migraines can be passed down through families, so they could already be apart of your medical history by the time one starts having symptoms. Additionally, a doctor typically likes to rule out an underlying reason for migraines, such as a previous brain injury or traumatic event. Sometimes there is no clear indication of how migraines start.

Types of Imaging Used for Migraine diagnosis

Although imaging is often used to help diagnose migraines, that is not the full picture. Imaging such as CT and MRI are mostly used to rule out other causes of migraines such as tumors or narrowed arteries. This is a common misconception as people often think that any kind of imaging done will help figure out a cause for their pain.

CT: More often than not, if someone is having a sudden onset, severe migraine for the first time in their lives a doctor will order a CT(Computed Tomography) scan. This type of scan uses X-ray radiation to get a 3D image of your skull and soft tissues. Furthermore, contrast can also be added to highlight the brain's blood vessels. This is done first as a CT scan is a great way to diagnose a brain bleed, brain tumor, an aneurysm, or a stroke. All the aforementioned conditions are serious and require immediate medical attention.

MRI: Often, a doctor will order an MRI (Magnetic Resonance Imaging) scan to get a more detailed look at the brain and nervous system. An MRI is the best type of imaging out there for looking at soft tissues and may be able to detect any changes in the structural foundation of the brain. The MRI images are able to show everything the CT would have been able to see and more. An MRI can help diagnose brain infections and spinal cord issues. MRI research has gotten to the point of being able to tell the difference between people with migraines and people without. Mainly, this new research shows a possible change in the cortical thickness of the brain's pain processing regions.



Treatment of Migraines

Due to migraines varying so differently person to person, it can be hard to treat them. The typical treatment of migraines often starts with over the counter medications, such as Tylenol or Ibuprofen. From there, doctors may prescribe a few different classes of medications. These medications have a goal of stopping a migraine before it starts, preventative, or ending it before it interferes with daily life, relief. The prescribed drugs can often include types of Triptans, Beta-Blockers, Analgesics or Stimulants. There is many different kinds of migraine targeted medication on the market and for some it is a matter of continuously trying new combinations of medications to get pain free. Some people still may be against taking daily medications for the treatment of migraines so there is also some alternative treatment courses. Migraine sufferers also try to find relief through acupuncture, massage therapy or even aroma therapy. Lifestyle modifications can also have a huge impact on the frequency and severity of migraine attacks. Stress management through ways of yoga or other forms of exercise can help reduce stress, which is a common migraine trigger. Changing your diet to avoid other trigger foods such as alcohol, caffeine, or even dairy may help in reducing migraines.



Conclusion

Roughly 1 in 8 people experience migraines globally, making migraines one of the most common neurological disorders across the globe. While CT scans and MRIs are a common go-to on the path to helping a migraine diagnosis, they are not able to fully uncover every reason for migraines. The brain is extremely complex and the causes for migraines may not even end up being a functional issue that is able to be seen on a scan. MRIs are able to determine any structural changes and ruling out any underlying problems can make a clearer path for further treatment.