Chronic migraine

- Patient Satisfaction with Aesthetic Outcomes Following OnabotulinumtoxinA Treatment for Chronic Migraine: A Cross-Sectional Study
- Cost-efficacy evaluation of a mindfulness-based program added to treatment as usual for the treatment of chronic migraine associated to medication overuse headache
- Global, regional, and national burdens and trends of migraine among males aged 10-59 years from 1990 to 2021: insights from the Global Burden of Disease study 2021
- Genetic Interplay Between Attention-Deficit/Hyperactivity Disorder and Pain Suggests Neurodevelopmental Pathways and Comorbidity Risk
- Chronic invasive fungal rhinosinusitis in a patient with chronic migraine
- The economic burden of migraine: A nationwide cost-of-illness approach from the year 2020 European Health Interview Survey in Spain
- Prevalence of adverse childhood experiences in the refractory chronic migraine population compared to non-refractory chronic and episodic migraine
- Heightened visual light sensitivity discomfort measured by the ocular photosensitivity analyzer is associated with chronic ocular pain

Chronic neurological disorder characterized by recurrent moderate to severe headaches often in association with a number of autonomic nervous system symptoms. The word derives from the Greek ἡμικρανία (hemikrania), “pain on one side of the head”, from ἡμι- (hemi-), “half”, and κρανίον (kranion), “skull”.

Epidemiology

Chronic migraines (CM) affect approximately 2% of the population, resulting in significant disability, economic burden, and impairments in quality of life. Historical neurosurgical procedures, such as lesioning of the trigeminal dorsal root entry zone or neurolysis of the occipital nerve, have not gained favor because of procedural morbidity and poor durability, respectively. Occipital nerve stimulation is emerging as a potentially promising modality for the treatment of CM, with greater than 50% pain reduction in approximately 80% of patients in open-label trials and ~40% of patients in randomized controlled trials. Mechanisms of neuromodulation remain unclear [1)].

Classification

Migraine Classification

Clinical Features

Typically the headache affects one half of the head, is pulsating in nature, and lasts from 2 to 72 hours. Associated symptoms may include nausea, vomiting, and sensitivity to light, sound, or smell. The pain is generally made worse by physical activity.

Up to one-third of people with migraine headaches perceive an aura: a transient visual, sensory,

language, or motor disturbance which signals that the headache will soon occur.

Occasionally an aura can occur with little or no headache following it.

Migraines are believed to be due to a mixture of environmental and genetic factors.About two-thirds of cases run in families.

Changing hormone levels may also play a role, as migraines affect slightly more boys than girls before puberty, but about two to three times more women than men.

The risk of migraines usually decreases during pregnancy.

The exact mechanisms of migraine are not known. It is, however, believed to be a neurovascular disorder.

The primary theory is related to increased excitability of the cerebral cortex and abnormal control of pain neurons in the trigeminal nucleus of the brainstem.

Molecular mechanisms

Its molecular mechanisms remain poorly understood. There is some debate about whether migraine is a disease of vascular dysfunction or a result of neuronal dysfunction with secondary vascular changes. Genome-wide association (GWA) studies have thus far identified 13 independent loci associated with migraine. To identify new susceptibility loci, Gormley et al carried out a genetic study of migraine on 59,674 affected subjects and 316,078 controls from 22 GWA studies. We identified 44 independent single-nucleotide polymorphisms (SNPs) significantly associated with migraine risk ($P < 5 \times 10\text{-}8$) that mapped to 38 distinct genomic loci, including 28 loci not previously reported and a locus that to our knowledge is the first to be identified on chromosome X. In subsequent computational analyses, the identified loci showed enrichment for genes expressed in vascular and smooth muscle tissues, consistent with a predominant theory of migraine that highlights vascular etiologies [2)].

Complications

see Migraine and Intracerebral hemorrhage.

Treatment

see Migraine treatment.

Systematic review and meta-analysis

Naghdi et al. identified, reviewed, and extracted data from randomized controlled trials (RCTs) of preventive drugs for chronic migraine with at least 200 participants. Data were analysed using network meta-analysis.

They included 12 RCTs of six medications (Eptinezumab, Erenumab, Fremanezumab, Galcanezumab,

Onabotulinumtoxin A, and Topiramate) compared to placebo or each other. All drugs effectively reduced monthly headache and migraine days compared with placebo. The most effective drug for monthly headache days was Eptinezumab 300mg, with a mean difference of -2.46 days, 95% Credible Interval (CrI): -3.23 to -1.69. On the Surface Under the Cumulative Ranking Area (SUCRA) analysis, the probability that Eptinezumab 300mg was ranked highest was 0.82. For monthly migraine days, the most effective medication was Fremanezumab-monthly, with a mean difference: -2.77 days, 95% CrI: -3.36 to -2.17, and 0.98 probability of being ranked the highest. All included drugs, except Topiramate, improved headache-related quality of life. No eligible studies were identified for the other common preventive oral medications such as Amitriptyline, Candesartan, and Propranolol. The main reasons were that the studies did not define chronic migraine, were undertaken before the definition of chronic migraine, or were too small.

All six medications were more effective than the placebo on monthly headache and migraine days. The absolute differences in the number of headache/migraine days are, at best, modest. No evidence was found to determine the relative effectiveness of the six included drugs with other oral preventive medications.

Registration: PROSPERO (number CRD42021265990) [3].

1)
Tavanaiepour D, Levy RM. Peripheral neuromodulation for treatment of chronic migraine headache. Neurosurg Clin N Am. 2014 Jan;25(1):11-4. doi: 10.1016/j.nec.2013.08.010. Epub 2013 Oct 7. PubMed PMID: 24262895.

2)
Gormley P, Anttila V, Winsvold BS, Palta P, Esko T, Pers TH, Farh KH, Cuenca-Leon E, Muona M, Furlotte NA, Kurth T, Ingason A, McMahon G, Ligthart L, Terwindt GM, Kallela M, Freilinger TM, Ran C, Gordon SG, Stam AH, Steinberg S, Borck G, Koiranen M, Quaye L, Adams HH, Lehtimäki T, Sarin AP, Wedenoja J, Hinds DA, Buring JE, Schürks M, Ridker PM, Hrafnsdottir MG, Stefansson H, Ring SM, Hottenga JJ, Penninx BW, Färkkilä M, Artto V, Kaunisto M, Vepsäläinen S, Malik R, Heath AC, Madden PA, Martin NG, Montgomery GW, Kurki MI, Kals M, Mägi R, Pärn K, Hämäläinen E, Huang H, Byrnes AE, Franke L, Huang J, Stergiakouli E, Lee PH, Sandor C, Webber C, Cader Z, Muller-Myhsok B, Schreiber S, Meitinger T, Eriksson JG, Salomaa V, Heikkilä K, Loehrer E, Uitterlinden AG, Hofman A, van Duijn CM, Cherkas L, Pedersen LM, Stubhaug A, Nielsen CS, Männikkö M, Mihailov E, Milani L, Göbel H, Esserlind AL, Christensen AF, Hansen TF, Werge T; International Headache Genetics Consortium, Kaprio J, Aromaa AJ, Raitakari O, Ikram MA, Spector T, Järvelin MR, Metspalu A, Kubisch C, Strachan DP, Ferrari MD, Belin AC, Dichgans M, Wessman M, van den Maagdenberg AM, Zwart JA, Boomsma DI, Smith GD, Stefansson K, Eriksson N, Daly MJ, Neale BM, Olesen J, Chasman DI, Nyholt DR, Palotie A. Meta-analysis of 375,000 individuals identifies 38 susceptibility loci for migraine. Nat Genet. 2016 Jun 20. doi: 10.1038/ng.3598. [Epub ahead of print] PubMed PMID: 27322543.

3)
Naghdi S, Underwood M, Madan J, Brown A, Duncan C, Matharu M, Aksentyte A, Davies N, Rees S, Cooklin A, Grove A, Mistry H. Clinical effectiveness of pharmacological interventions for managing chronic migraine in adults: a systematic review and network meta-analysis. J Headache Pain. 2023 Dec 6;24(1):164. doi: 10.1186/s10194-023-01696-w. PMID: 38057728.