Migraine

م. نور سعد محمد علي

فرع التشخيص الفمي

Learning Objectives

- **To provides an overview of the etiology and pathogenesis, epidemiology, clinical manifestations, differential diagnosis, and management of migraine.**

Definition

Migraine is more than “just a headache.” It is a complex but relatively benign neurologic disorder with head pain as one of its clinical manifestations. It is also associated with a broad spectrum of other symptoms caused by the involvement of several brain structures.

Epidemiology

The global prevalence of migraine is approximately 14.4% and it is three times more frequent in females than males. In children, abdominal migraine is a subtype of functional abdominal pain affecting about 13.5% of children world wide. A high incidence of infant colic has been reported in migraineurs compared to controls.

In females, there is a sudden increase in prevalence during puberty and a decline following menopause. Considering the high prevalence during the most productive years of a patient's life, there is,

consequently, a substantial cost to society due to decreased productivity and increased healthcare utilization. According to the 2016 Global Burden of Disease (GBD) study, migraine is the second most disabling condition in the world (second to low back pain)

Pathophysiology

Migraine is a complex neurovascular headache. Its etiopathophysiology is not completely understood. The phe nomenon underlying the migraine pain and aura is cortical spreading depression (CSD), which is a self-propagating neuronal and glial depolarization that spreads across the cerebral cortex. This process results in neuronal dysfunction, substantiated by recent evidence of microstructural abnormalities of the trigeminal nerve in migraineurs. The headache also involves recurrent activation of the trigeminocervical complex by neurotransmitters, such as neuropeptides, of which the calcitonin gene-related peptide (CGRP) is known to be a key player, and other inflammatory mediators, which cause neurogenic inflammation and neuronal sensitization.

- the gut microbiota profile also plays a role in migraine pathogenesis. There appears to be a genetic and familial risk, as more than half of all migraineurs report having other family members who suffer from migraine.
- In addition, specific mutations leading to rare causes of vascular headache have been identified.
- Hemiplegic migraine, for example, is caused by mutations in genes that encode ion channel and transport proteins. Genetic mutations cause impaired neurotransmission and cortical hyperexcitability, which result in increased susceptibility to CSD and impaired sensory processing.

Clinical manifestations

The migraine headache is a moderate to severe, pulsating, unilateral head pain that is aggravated by routine physical activity (such as walking or climbing stairs).

- In addition, nausea and/or vomiting, or photophobia and phonophobia, are present. Osmophobia has been reported to increase the diagnostic sensitivity of migraine.
- The headache begins with gradual onset, reaching a peak in 2–4 hours. The pain typically lasts 4–72 hours untreated or unsuccessfully treated. Migraine may present as isolated facial pain, rendering it an important differential diagnosis for dental pain and TMD.

- postdromal symptoms, such as fatigue or mood change, may last hours or a few days following the migraine. Migraines occurring at least 15 days per month for more than 3 months fulfill the criteria for chronic migraine, although patients with 8 or more migraine days per month are similarly disabled.

The management

The management of migraine includes

- patient education
- pharmacologic and nonpharmacologic strategies.

✓ The patient needs to be educated about the diagnosis, etiology, trigger avoidance (if applicable), and management strategies.

pharmacotherapy is divided into

✓ prophylactic or preventative therapy,

✓ and acute or abortive therapy.

- Patients experiencing four or more migraine headache days per month, patients whose migraines significantly interfere with daily routine despite acute treatment, and patients in whom acute treatment is contraindicated, has failed, or is overused (defined as use in 10 or more days per month) are candidates for prophylactic therapy.

Table 12-3 Migraine preventative medications listed in order of most established efficacy.

Drug Class	Examples
Anticonvulsants	Topiramate, valproate sodium, divalproex sodium
Beta-adrenergic blockers	metoprolol, propranolol, timolol
Onabotulinum toxin	Onabotulinum toxin A
Calcitonin gene-related peptide monoclonal antibodies (CGRP MABs)	Erenumab, fremanezumab, galcanezumab
Triptans	Frovatriptan
Antidepressants	Amitriptyline, venlafaxine

- First-line migraine preventatives include: anticonvulsants (such as topiramate)
- The oral prophylactics must be taken daily and usually have a 2–6-week period before an effect is observed.

➢ Onabotulinum toxin A is FDA approved for the management of chronic migraine and is injected every 3 months via the PREEMPT protocol using a total of 155 units into 31 injection sites. Onabotulinum toxin A acts via blocking the release of pro-inflammatory and excitatory neurotransmitters and reducing the pronociceptive ion channels on the afferent neurons.

- Monoclonal antibodies (MABs) targeting the CGRP receptor (such as erenumab, fre manezumab, and galcanezumab) have been recently approved by the FDA for the prevention of migraine. The CGRP MABs are injected subcutaneously monthly and are devoid of drug interaction concerns.
- A reasonable goal for preventative therapy is a 50% reduction in migraine headache days, a significant decrease in migraine duration or pain intensity, improved response to acute treatment, reduction in migraine-related disability, or improvement in quality of life.

- Episodic migraine can often be managed with abortive therapy alone. While most individual attacks are successfully managed with oral agents, parenteral drugs may be necessary when nausea and/or vomiting accompany the attacks. Abortive agents for migraine include
- **the non steroidal anti-inflammatory drugs (NSAIDs)**
- **ergotamine derivatives**
- **the triptans (5-HT1B/1D/1F agonists)**
- **opioids,**
- **and the gepants (CGRP receptor antagonists).**

Table 12-4 Migraine-abortive medications (listed in order of most established efficacy).

Drug Class	Examples
Nonsteroidal anti-inflammatory drugs (NSAIDs)	Aspirin, ibuprofen, diclofenac, naproxen
Ergot alkaloids	Dihydroergotamine, ergotamine
Triptans (5HT receptor agonists)	Almotriptan, eletriptan, frovatriptan, naratriptan, rizatriptan, sumatriptan, zolmitriptan, lasmiditan
Gepants (calcitonin gene-related peptide [CGRP] receptor antagonists)	Ubrogepant, rimegepant
Opioids	Butorphanol

It is also noteworthy that frequent use of migraine abortive medications may cause medication-overuse head aches (defined as the use of abortive medication for 10–15 days per month and that the abortive is causing the increase in headaches). Nonpharmacologic management plays an important role in the management of migraine. This includes biobehavioral therapies such as relaxation training, biofeedback, cognitive behavioral therapy, mindfulness and meditation, and other forms of complementary and alternative therapies such as acupuncture treatment.

These modalities are important for patients in whom pharmacologic management is contraindicated and for those who prefer nonpharmacologic management. In addition, when combined with pharmacotherapythey may enhance the clinical therapeutic outcome or permit a reduction in the amount of medications used.

adequate management of migraine comorbidities is integral to the success of migraine management. Comorbid depression, anxiety, insomnia, and widespread pain (including TMD) should be identified and their management prioritized.