Migraine

Introduction

Migraine is classified as either episodic or chronic. The three main types of migraine (migraine without aura, migraine with aura and migraine aura without headache) account for the vast majority of migrainous headaches encountered in clinical practice.¹

Chronic migraine is a disabling neurological condition that affects 2% of the general population. Patients with chronic migraine have headaches on at least 15 days a month, with at least eight days a month on which their headaches and associated symptoms meet diagnostic criteria for migraine.²

Classification

In 1988 the International Headache Society produced a classification of migraine. The third edition of the International Classification of Headache Disorders was published in 2013 and classifies migraine as follows:³

- Migraine without aura.
- Migraine with aura.
- Hemiplegic migraine.
- Chronic migraine.
- Complications of migraine: status migrainosus, persistent aura without infarction, migrainous infarction, migraine aura-triggered seizure.
- Probable migraine, with or without aura.
- Episodic syndromes that may be associated with migraine: recurrent gastrointestinal disturbance, cyclical vomiting syndrome, abdominal migraine, benign paroxysmal vertigo, benign paroxysmal torticollis.

This article will concentrate on the common varieties of migraine, ie migraine with or without aura, and chronic migraine.

Epidemiology

- Numbers may be misleading, as many who experience migraine do not consult their GP.
- Migraine affects about 6% of men and 18% of women.⁴
- In children it is more common in boys than in girls.
- The first attack is often in childhood and over 80% have had their first attack by the age of 30. If the onset is at age over 50, other pathology should be sought.
- Usually severity decreases with advancing years.
- There is a family history in many.

Presentation

By far the most important diagnostic tool for diagnosing the underlying cause and type of headache is the taking of a concise and representative history of the headaches.⁵ It can be useful for patients to keep a headache diary. This can save time and help to identify the type or types of headache experienced.⁶

Migraine is characterised by the following:

- Paroxysmal headaches that tend to be severe and often unilateral, although in 30-40% it is bilateral.
- There may be a premonitory phase in 20-60% of those with migraine. There may also be an aura. There may be photophobia and vomiting with marked headache but the course is highly variable.
The resolution phase occurs as the headache gradually fades. The person may feel tired, irritable, depressed and have difficulty concentrating.

It can be appreciated how important a good history is by considering the box and diagnostic criteria below.

**Headache history**

How many different headache types does the patient experience?
- Separate histories are necessary for each.
- It is reasonable to concentrate on the most bothersome to the patient, but always enquire about the others in case they are clinically important.

- Timing questions:
  - How long?
  - How frequent?
  - Onset? How does the headache start?
  - Duration? How long does the headache last?
  - Is there a temporal pattern to the headaches?

- What is the character and site of pain?
- Is there any spread and are there any associated symptoms?
- Are there any causal factors?
  - A diary may help to identify predisposing and trigger factors. Predisposing or trigger factors are found in only a minority of people but are important, as treating them may help the migraine. In about 20% a dietary factor can be identified. Examples of factors are:
    - Stress or even relaxation after periods of stress. Stress can include bright lights, loud noise, long-distance travel and extremes of weather.
    - Anxiety or depression.
    - Trauma to the head or neck.
    - Dietary factors, including cheese, chocolate, alcohol and citrus fruits.
    - Missed meals or drinks (dehydration). [7]
    - Sleep deprivation or excessive sleep.
    - Oral contraceptives and vasodilators which may precipitate or exacerbate the condition.

- Family history.

- How does the patient respond to the headache?
  - Does the patient have to go to bed during an attack?
  - How disruptive are the headaches to work, social activity, etc?
  - What medication has been tried? How is medication used?

- How is health between attacks?

**Migraine without aura**

This is a recurring disorder, and the diagnosis is not made until the patient has a history of at least five attacks. The headaches should not be secondary to any other headache disorder (exclude by history and examination) - see the separate Secondary Headache article.

Typically the headaches last between 4 and 72 hours and have at least two of the following features:

- Unilateral.
- Pulsating.
- Moderate or severe intensity of pain.
- Aggravated by, or resulting in the avoidance of, routine physical activity.

In addition, there is at least one of:

- Nausea and vomiting during migraine attacks. These are common symptoms that affect at least 60% of patients suffering from migraines. [8]
- Photophobia and phonophobia, which are also very common.
General light-headedness is experienced by 70%. It is thus important to stress that migraine can be bilateral and be associated with phonophobia. Tension-type headache (TTH) tends to be over-diagnosed and migraine under-diagnosed in general practice.

**Migraine with aura**

This affects about a third of those who experience migraine, and is usually easier to diagnose. The premonitory phase is different from an aura and occurs hours to days before the headache. There may be a feeling that a migraine is imminent. Common features are depression, tiredness, difficulty concentrating, irritability, stiff neck and food cravings. Many different features can be present but they tend to be consistent for the individual.

Aura is also highly variable in nature but it also tends to be constant for the individual. Typically, aura symptoms are progressive, of gradual onset over minutes, last five minutes to an hour and occur before the headache:

- Visual disturbance starts in one eye and may spread. It may be homonymous, ie it affects just one side of the visual field but in both eyes. A fortification spectrum is common or a spreading, scintillating scotoma in the shape of a jagged crescent. Geometric visual patterns and even hallucinations may occur. This is fully reversible. An aura has no motor symptoms.
- Those who experience this type of migraine may also have sensory symptoms (paraesthesia or numbness) that are unilateral and also fully reversible. Numbness usually starts in the hand and moves up the arm before involving the face, lips and tongue. The leg is sometimes affected. Numbness may follow the paraesthesia. Sensory auras rarely occur alone and usually follow visual auras.
- The headache either begins before the end of the aura or within an hour of the end and has the same features as migraine without aura (above).
- One patient may at different times have migraine attacks with and without aura. Sometimes no headache may follow a typical aura - but always consider the possibility of transient ischaemic attack (TIA) rather than migraine in these patients, particularly if the patient says the aura was different from their usual aura. [1]

**Migraine in children**

The classification of migraine has been modified for children, allowing for headache with fewer associated features:

- Migraine often starts in childhood and is more common than is realised.
- Childhood periodic syndromes (including cyclical vomiting and abdominal migraine) are thought by many to be a precursor of migraine.
- Features of migraine in children are fairly similar to those of adults, including being completely well between attacks. However, the headache is often bilateral or in the middle of the head, and gastrointestinal symptoms are more prominent. [1]
- Attacks may be shorter and last between 1 and 72 hours. [1]
- Some features are inferred from the child's behaviour, like covering the eyes or ears, closing the curtains and wanting to lie in a quiet dark room.

See the separate Migraine in Children article.

**Menstrual migraine**

- This is migraine without aura, occurring regularly within a day or two of the onset of menstruation and at no other time.
- It is probably due to falling oestrogen levels.
- Timing is critical for this diagnosis. Only 14% of women with migraine experience menstrual migraine but up to 60% experience menstrual-associated migraine.
- Migraine diaries can accurately differentiate menstrual migraine from menstrual-associated migraine. This is important, as the preventative treatment of menstrual migraine is different from that of menstrual-associated migraine.
Examination

Always examine the following in patients with headache:[1]

- Optic fundi.
- Blood pressure.
- Head and neck (scalp, neck muscles and temporal arteries).
- Head circumference in children.

Neurological examination between attacks is normal. Abnormalities suggest another cause.

Examination during an attack may reveal localised oedema of the scalp, face, or under the eyes; scalp tenderness; prominence of temporal blood vessels; neck stiffness and tenderness.

Investigations

Investigations are required only to exclude an alternative diagnosis if one is suspected. If second-line treatment of acute symptoms fails, or diagnosis of migraine is not certain, referral to a neurologist is usually required.

Imaging patients with suspected brain tumours[9]

- Red flags (tumour probability >1%) - urgent investigation:
  - Papilloedema.
  - New seizure.
  - Headache with other significant conditions including:
    - Cancer (especially lung and breast).
    - Neurofibromatosis.
    - Immunodeficiency.
  - Abnormal neurological signs or symptoms including:
    - Changes in consciousness.
    - Confusion.
    - Lack of co-ordination.
  - New-onset cluster headache.

- Orange flags (tumour probability 0.1% to 1%) - monitor, refer for investigation:
  - New headache and no clear diagnosis after eight weeks.
  - Headache aggravated by exertion or Valsalva manoeuvre.
  - Headache associated with vomiting.
  - New headache in those aged over 50.
  - Changed pattern of headaches (severity, frequency, etc).
  - Headaches that wake patients from sleep.

- Yellow flags (tumour probability <0.1%) - require appropriate management:
  - Migraine and TTH.
  - Memory loss.

The following are suggestive of more serious pathology:

- Headache of new onset after 50 years of age or under 10 years of age.
- Headache with an atypical aura (eg, aura lasting more than one hour or with muscular weakness).
- Systemic symptoms like myalgia, fever, malaise or weight loss.
- Described as the worst headache of the patient's life, especially if it was rapid in onset.
- A change in frequency, severity, or clinical features of the attack from what is normally experienced.
- A new progressive headache that persists for days.
- Precipitation of headache by Valsalva manoeuvres, as in coughing, sneezing or bearing down.
- Scalp tenderness or jaw claudication.
- Focal neurological abnormalities or confusion, seizures or impaired level of consciousness.
- Focal neurological findings that occur with the headache and persist temporarily after the pain resolves suggest a migraine variant. In hemiplegic migraine, the patient may have paralysis of one side of the body and possibly aphasia. In ophthalmoplegic migraine, the patient may present with a third nerve palsy, with ocular muscle paralysis, including or sparing the pupillary response, as well as ptosis. This is more common in children, with the abnormal motor findings lasting hours to days after the headache.

Differential diagnosis

The most severe and disabling headaches are usually primary headaches:

- **Cluster headache.**[^10]
- **TTH.**[^11]
- **Medication-induced headache.**[^12]
- Chronic daily headache. This is really a convenient label for headache which occurs for months on more than 50% of days. It excludes cluster headache and chronic migraine (migrainous headache occurring every day) but includes TTH and medication-induced headache.
- **Sinusitis.** Ethmoid sinusitis can produce headache similar to migraine.
- **Brain tumour** is rarely the cause of a headache, especially in the absence of other symptoms.
- **Subarachnoid haemorrhage.**
- **Giant cell arteritis (temporal arteritis).**
- **Idiopathic intracranial hypertension.**
- **Cerebrovascular event, TIA;** migraine in an older person may be confused with TIA or stroke.[^13]

It is very important to exclude serious pathology. See also the separate article on **Secondary Headache.**

Management

The separate article on **Migraine Management** covers this in detail. In general the aim should be:

- To relieve the symptoms of an acute attack of migraine.
- To reduce the frequency and severity of migraine attacks.
- To identify possible trigger factors.

Migraine management covers the different drugs used for acute attacks.

General measures include identification and avoidance of trigger factors. A migraine diary is often helpful for this. Other therapies include relaxation therapy, biofeedback, cognitive or behavioural therapy, psychotherapy, acupuncture and hypnosis. All have their advocates but good evidence of efficacy is lacking.

Migraine prophylaxis may be used if attacks are happening at least twice a month or tend to be severe or prolonged. If medication for acute attacks is required once or twice a week then prophylaxis should certainly be considered.

For episodic migraine, approved drugs for migraine prophylaxis are effective but adverse effects may restrict their use.[^14] Studies have shown poor adherence to oral migraine prophylaxis.[^15]

See the separate article on **Migraine Prophylaxis in Adults.**

Associated conditions

People with chronic migraine have a significantly higher frequency of some comorbid conditions, including chronic pain, psychiatric disorders, respiratory illness, and some vascular risk factors.[^16]
Migraine and contraception

There is much evidence that migraine with aura is associated with a two-fold increased risk of ischaemic stroke. [17, 18] Other risk factors for stroke, like use of the combined oral contraceptive pill (COCP), high blood pressure or smoking, have multiplicative effects on the risk for ischaemic stroke. Contra-indications for the use of COCPs in women with migraine are based on expert opinion. They are intended to enable most women with migraine to use COCPs safely with minimal risk of ischaemic stroke, while protecting those at higher risk.

If an aura occurs for the first time while a woman is using the COCP, she should stop the pill immediately, use emergency contraception if necessary and consider other methods.

Advice is to avoid the COCP in:

- Migraine with aura.
- Migraine without aura if there is more than one additional risk factor for stroke. These include age 35 years or over, diabetes mellitus, close family history of arterial disease in those under 45 years of age, hyperlipidaemia, hypertension, obesity or smoking.
- A headache phase lasting over 72 hours (called status migrainosus).
- Migraine treated with ergot derivatives.

Which contraceptives can be used?

- Women with migraine without aura and no additional risk factors for ischaemic stroke may use a COCP. If focal symptoms start, or frequency increases, the COCP should be stopped due to the risk of ischaemic stroke.
- All other forms of contraception are acceptable, including progestogen-only contraceptive pills and depot and implant hormonal contraception.

Pregnancy and breast-feeding

Migraine often improves during pregnancy, only to return to its former pattern after delivery. Paracetamol is the drug of choice for use in pregnancy and breast-feeding.

- Ibuprofen or aspirin may be used but should be avoided after 30 weeks because of the risk of premature closure of the ductus arteriosus. Aspirin should be avoided by breast-feeding mothers, due to the potential risk of Reye's syndrome.
- Promethazine is the anti-emetic of choice although it is not prokinetic.
- Triptans should be avoided in pregnancy and breast-feeding because of limited evidence of safety.
- If prophylaxis must be used, propranolol or amitriptyline could be considered. [19]

Complications

- Migraine is associated with an increased risk of depression, bipolar disorder, generalised anxiety disorder and panic disorder.
- Status migrainosus - defined as a debilitating migraine that lasts for more than 72 hours.
- Migrainous infarction - occurs when a cerebral infarction happens during the course of a typical attack of migraine with aura. The aura lasts over an hour and neuro-imaging shows ischaemic infarction.
- Migraine is associated with increased risk of ischaemic and haemorrhagic stroke. [18, 21]

Further reading & references

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