

## Migraine and stroke

Migraine is a complex condition, which can impact on your work and social life. It is characterised by a severe headache, which usually occurs with a range of other symptoms. It is thought that migraine can slightly increase the risk of stroke, particularly in younger women. This factsheet explains more about migraine, its link to stroke, and lists some useful organisations that offer further information.

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### What is migraine?

A migraine can have a wide **range of symptoms**. For many people the key symptom is a **severe headache**. Usually this is felt as a throbbing or pulsating pain at the front or on one side of your head. This is often accompanied by other symptoms such as **nausea and/or vomiting**, and **sensitivity to light, sound or smell**.

Migraine affects around 15 per cent of the population. Women are about three times as likely to experience migraine as men. People of all ages are affected by migraine, but the condition usually begins in young adulthood. Some people have several migraines a week; others may have years between migraine attacks.

### What are the main types of migraine?

There are two main types of migraine:

**Migraine without aura** (also known as common migraine): the majority of people with migraine have this type. It consists of a headache with nausea and/or sensitivity.

The other symptoms usually begin at the same time as the headache and disappear once the headache goes. Headaches usually last between four and 72 hours.

**Migraine with aura** (also known as classical migraine). It affects between 10 and 30 per cent of people who have migraines. Many people who have this type also get migraine attacks without aura. **Attacks usually begin with an 'aura'** consisting of some of the following symptoms which develop gradually over 5-20 minutes and last less than one hour.

- Visual changes. This is the most common aura symptom and the changes can include flashing lights, zig-zags, sparks or dark patches. These can appear on one side or centrally and commonly expand and move across your field of vision.
- Sensations such as pins and needles and heaviness, which spread from one body part to another.
- Less commonly, you may have difficulty speaking.

If you experience more than one aura symptom they usually follow one another, so you may experience visual changes first, then changes in sensation, then sometimes loss of speech.

**The typical migraine symptoms of headache and nausea usually then follow,** although they may happen at the same time or even before. Occasionally someone may experience the aura without a headache.

Whether or not you have a migraine aura, you may experience different symptoms hours or days before a migraine attack. These can include changes in mood and energy levels, aches and pains and sensitivity to light or sound. These are called prodromal or premonitory symptoms.

### Rare types of migraine

There are also some rare types of migraine. They are also classed as migraine with aura:

#### Basilar-type migraine

This is named after the basilar artery, a blood vessel in the back of your head, although it is unclear whether this blood vessel is actually involved. This type of migraine usually involves a headache at the back of your head rather than on one side. This follows, or is accompanied by, an aura which may involve problems with vision or hearing, speaking difficulties, tingling in your hands and feet (on both sides) and dizziness or problems with co-ordination.

#### Hemiplegic migraine

Hemiplegia means paralysis on one side of the body and **weakness or paralysis on one side is a key symptom of this type of**

**migraine.** Other symptoms might include numbness or pins and needles, visual problems, confusion and speech problems. These problems usually go within 24 hours, but they may last a few days. A headache usually follows. This type of migraine can be particularly frightening as **the symptoms are similar to a stroke** but in hemiplegic migraine they usually develop more slowly, whereas a stroke is usually a sudden event.

If you have a parent who has hemiplegic migraines then you have about a 50 per cent chance of having this type of migraine yourself. This is called familial hemiplegic migraine (FHM). In some families with FHM, problems have been found with particular genes which affect how the brain cells communicate with each other. If no one else in your family has hemiplegic migraines this is called sporadic hemiplegic migraine (SHM).

### What causes a migraine?

Migraine involves several complex changes in the brain and the exact cause is not well understood.

One factor, which experts think is important, is a **reduction in a chemical called serotonin** in the brain during the migraine attack. This can cause blood vessels to suddenly contract (narrow). The blood vessels then relax (widen), which may cause the headache. It used to be thought that migraine was mainly caused by changes in blood vessels. However this is unlikely to be the whole story.

Another important cause of aura symptoms may be 'cortical spreading depression' (CSD) which is a **reduction in the normal electrical activity in the brain.** It is unclear what causes changes in serotonin or CSD.

**Changes in hormones** – particularly oestrogen – probably play an important role in migraine. During puberty, when oestrogen levels rise, migraine becomes much more common in girls. Some women have migraines just before, during or after their periods – this is called menstrual migraine. Migraines can also be difficult to control as menopause is approaching and contraceptives that contain oestrogen or oestrogen replacement therapy often make them worse.

There is also a tendency for migraine to **run in families** so there is probably a genetic link.

### Migraine triggers

There are various **‘triggers’** that can lead to a migraine attack.

These vary and can be:

- **emotional**: such as stress, anxiety or depression
- **physical**: such as tiredness or tension, particularly in the neck and shoulders
- **dietary**: particularly lack of food, alcohol or certain foods such chocolate or cheese
- **environmental**: such as bright lights or a stuffy atmosphere
- **medicines**: including some sleeping tablets and the contraceptive pill.

One trigger may not always cause a migraine to occur. Often it takes more than one trigger to lead to an attack, for example being under emotional stress and missing a meal.

### What is the link between migraine and stroke?

A stroke happens when the blood supply to the brain is interrupted. This could be due to a blockage (called an ischaemic stroke) or due to bleeding in or around the brain (called a haemorrhagic stroke).

The relationship between migraine and stroke is complex. **You have a slightly higher risk of stroke if you have some types of migraine.** Some of the symptoms of migraine and stroke can be confused with each other.

### The risk of stroke

Recent studies show that having **migraine with aura** doubles the risk of a stroke caused by a blockage. This risk is higher in women than in men. The risk is also higher for people aged under 45, people who smoke and women who take the oral contraceptive pill.

Whilst this research may seem frightening, it is important to put the findings in context. **Your risk of stroke, if you are a younger adult, is likely to be very low, even if you have migraine with aura.** This is because stroke is very rare in younger people, who are less likely to be affected by other factors, like furring up of the arteries.

Some studies have suggested that there may be an increased risk of stroke if you have migraine without aura. However, this is not supported by more recent research.

It has also been shown that the risk of a stroke caused by bleeding in the brain (haemorrhagic stroke) might be higher in women aged under 45 years who have migraine with aura. However, more research is needed to confirm this.

If you are concerned about your risk of stroke, **speak to your doctor** who can advise you on your individual risk, and on the treatment and prevention of migraine.

### How does migraine increase the risk of stroke?

Occasionally, when someone has a migraine and experiences their usual aura, they do not recover as they usually would and it continues. A **migrainous stroke** may be diagnosed if, after a full investigation, a more likely cause cannot be found.

The most common effect of a migrainous stroke is a visual problem called **homonymous hemianopia** – where you can only see the right or the left side of the world out of each eye. This type of stroke rarely seems to cause other lasting severe disabilities and does not usually happen again.

**It is not clear why a migrainous stroke happens**, but there are several changes during a migraine, which may be important. At the beginning of a migraine attack the blood vessels constrict (narrow) leading to reduced blood flow. This process can also cause changes in the blood, which cause clots to form. These, in turn, could cause a blockage in a narrowed blood vessel. Dehydration and vomiting during migraine can cause low blood volume, which also makes blood clots more likely to form. If you have other risk factors for stroke such as atherosclerosis (furring up of blood vessels), this could happen more easily.

Strokes will not necessarily occur during a migraine attack. There are several possible reasons why having the condition may increase the risk of stroke. These include

migraines contributing to damaging the blood vessels, and migraines increasing the risk of fluid building up in the blood vessel walls (oedema) which can lead to the layers of the walls separating (dissection). This can lead to bleeding or clots forming in damaged blood vessels.

There could also be **underlying causes**, which contribute to both stroke and migraine. Conditions which make your blood more likely to clot, such as systemic lupus erythematosus (SLE), Hughes' syndrome and CADASIL are associated with migraine and with stroke. Migraine sufferers are also more likely than people who don't experience migraines to have a **patent foramen ovale (PFO)** – a hole in the wall dividing the two sides of the heart. This may contribute to both stroke and migraine.

### How do I tell the difference between migraine and stroke?

Some of the symptoms of migraine can be confused with stroke. **Hemiplegic migraine in particular shares many of the signs of stroke.**

Migraine auras can be confused with **transient ischaemic attack (TIA)** – where someone experiences the symptoms of stroke but they are temporary. Some people who have had migraine with aura get identical auras but without the headache. This can easily be mistaken for TIA.

**Migraine aura symptoms develop relatively slowly** and then spread and intensify, **whereas the symptoms of a TIA are sudden**. Migraine symptoms also tend to be 'positive'. You will probably acquire symptoms (such as seeing flashing lights or having a headache), rather than losing

abilities (such as losing muscle strength, vision or speech). In addition, a lack of other **risk factors** for stroke or TIA, a family history of migraine and previous, similar attacks would suggest migraine.

Migraine can sometimes be mistaken for a type of haemorrhagic stroke called a **subarachnoid haemorrhage** (SAH) which is often characterised by a sudden, very severe headache. A migraine can sometimes be sudden (called a 'crash migraine') and can lead to mild confusion or fever like SAH. However, unlike with SAH, migraine headache is usually one-sided and throbbing, slower to come on and lasts for a shorter period of time. Also, vomiting usually starts well into a migraine attack unlike SAH.

If you experience sudden weakness, numbness, speech or visual problems always **seek urgent medical attention** as these can be signs of a stroke.

### How is migraine treated?

#### Diagnosing migraine

Migraine is diagnosed by piecing together information about your symptoms and identifying patterns over time. Migraines can be unpredictable, so getting a diagnosis may take some time.

It is a good idea to **keep a diary** of your migraine symptoms and details such as what you ate and how you slept leading up to them. This may help you to identify and avoid your triggers.

#### Managing migraine

There are things you can do to manage your migraines. Many people find that ordinary over-the-counter **painkillers** such as

paracetamol, ibuprofen and aspirin reduce the pain of their migraine headache. If these are not effective, your GP or a specialist can prescribe a stronger painkiller. Medication is also available to reduce **nausea**, sometimes in a single tablet combined with a painkiller.

Anti-sickness medications and painkillers are most effective if they are taken as soon as your symptoms start. Your digestive system slows down during an attack which can mean that the medication is not absorbed into your body soon enough to have an effect. Some medication comes in forms that you can dissolve in water and these will have a faster effect. Medication that can be absorbed through the gums or rectum are also available if you have difficulty swallowing. Some over-the-counter medicines are not suitable for everyone. Always read the instructions on the packaging.

Many people find **sleeping or lying in a quiet, darkened room** helps to ease the symptoms at the time of a migraine, or at least shorten the duration of the migraine.

Applying pressure, an **ice pack** or a **hot water bottle** to the painful area can also be helpful. You may need to experiment to find out what works for you.

#### Stopping migraines once they have started

If painkillers do not help, there is a type of drug called a **triptan**, which can stop an attack once the headache is beginning to develop. Triptans work by causing blood vessels to narrow. Therefore, they stop the dilation of blood vessels, which probably contributes to migraine headache. Whilst it might seem that this would put you at risk of stroke, there is no evidence that this is the

case. However, it is generally recommended that you should have an evaluation of your risk of blood vessel problems if you are over 65.

### Preventing migraines

If you have very severe or frequent migraines, your doctor may prescribe preventative medication. This is usually **daily medication**, which you may have to take for three to 18 months. It may be a few months before you notice an effect. However, preventative treatment generally leads to a big improvement, which continues even after you have stopped taking the medication.

Many of the drugs used to prevent migraine are used for other conditions such as high blood pressure, epilepsy or depression. If you have had a stroke you may already have been prescribed some of these. If you are prescribed these drugs for migraine, you will usually be given a lower dose than if they are prescribed specifically for the other condition.

### Other treatments

There is a wide range of **alternative or natural treatments** available for migraine. There is some evidence that certain herbs and supplements are effective in reducing the frequency or severity of migraines, including magnesium, feverfew, coenzyme Q10, riboflavin and butterbur.

These may interact with medications you are already taking and can have unwanted side effects so **talk to your doctor before trying them**. Research has also shown that acupuncture and moderate regular exercise can help.

## Useful organisations

All organisations listed are UK wide unless otherwise stated.

### Stroke Association

**Stroke Helpline:** 0303 3033 100

**Website:** [stroke.org.uk](http://stroke.org.uk)

**Email:** [info@stroke.org.uk](mailto:info@stroke.org.uk)

Contact us for information about stroke, emotional support and details of local services and support groups. We also produce information on preventing stroke including specific factsheets on healthy eating and stroke, high blood pressure, and smoking.

### The Migraine Trust

**Helpline:** 020 7631 6970

**Email:** [info@migrainetrust.org](mailto:info@migrainetrust.org)

**Website:** [www.migrainetrust.org](http://www.migrainetrust.org)

Leading patient support and research charity for migraine. Can provide details of specialist migraine clinics.

### Migraine Action

**Tel:** 0116 275 8317

**Website:** [www.migraine.org.uk](http://www.migraine.org.uk)

Membership organisation providing information and advice about all aspects of migraine.



## Glossary of terms

**Aura** = a range of symptoms that start before a migraine headache, often including a visual disturbance

**Basilar-type migraine** = migraine involving pain at the back of the head with a number of other symptoms such as visual or hearing problems and pins and needles

**Classical migraine** = migraine with aura

**Common migraine** = migraine without aura

**Haemorrhagic stroke** = a stroke caused by bleeding in or around the brain

**Hemiplegic migraine** = a type of migraine that involves weakness or paralysis on one side of the body as well as other symptoms

**Homonymous hemianopia** = a type of visual problem where you can only see the left or right half of the world out of both eyes

**Ischaemic stroke** = a stroke caused by a blockage

**Subarachnoid haemorrhage (SAH)** = bleeding on the surface of the brain

**Transient ischaemic attack (TIA)** = also called a mini stroke, stroke like symptoms that are temporary and always disappear within 24 hours

**Triptan** = a type of medicine that aims to stop a migraine attack once it has started

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