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Trigeminal Neuralgia

Trigeminal neuralgia is defined as nerve pain (neuralgia) involving one or more of the branches of the trigeminal nerves. The trigeminal nerve carries sensation from your face to your brain.

What is the trigeminal nerve and what causes trigeminal neuralgia?

The trigeminal nerve (also called the fifth cranial nerve) is one of the main nerves of the face. There is one on each side. It comes through the skull from the brain, in front of the ear. The trigeminal nerve splits into three main branches. Each branch divides into many smaller nerves:

- The nerves from the first (ophthalmic) branch go to your scalp, forehead and around your eye.
- The nerves from the second (maxillary) branch go to the area around your cheek.
- The nerves from the third (mandibular) branch go to the area around your jaw.

The branches of the trigeminal nerve take sensations of touch and pain to the brain from your face, teeth and mouth. The trigeminal nerve also controls the muscles used in chewing and in the production of saliva and tears.

Usually one or both of the maxillary and mandibular branches are affected by trigeminal neuralgia. It is uncommon for only the ophthalmic branch to be affected. Only about 3 in 100 cases of trigeminal neuralgia affect both sides (are bilateral). It is much more common for people with bilateral trigeminal neuralgia to have other people in their family affected by the condition.

In about 80-90 out of 100 cases of trigeminal neuralgia it is thought that the cause is pressure on the nerve (compression) by a loop of artery or vein. Much more rarely, trigeminal neuralgia is a symptom of another condition, like a tumour, [multiple sclerosis](#), or an abnormality of the base of the skull. In some cases, the cause is not known.

How common is it?

Trigeminal neuralgia is uncommon. About 20 people in 100,000 develop it each year. It mainly affects older people, and it usually starts in your 60s or 70s. It is rare in younger adults. Women are more commonly affected than men.

What symptoms occur with trigeminal neuralgia?

Painful symptoms

Neuralgia means pain coming from a nerve. In trigeminal neuralgia you have sudden pains that come from one or more branches of the trigeminal nerve. The pains are usually severe. The second and third branches are the most commonly affected. Therefore, the pain is usually around your cheek or jaw or both. The first branch is less commonly affected, so pain over your forehead and around your eye is less common. Trigeminal neuralgia usually affects one side of your face. Rarely, both sides are affected.

The pain is stabbing ('like electric shocks'), piercing, sharp, or knife-like. It usually lasts a few seconds but can last up to two minutes. The pain can be so sudden and severe that you may jerk or grimace with pain. The time between each pain may be minutes, hours, or days. Sometimes the pain is repeated in quick succession. After an attack of pain, you may have a dull ache and tenderness over the affected area, which soon eases. However, constant pain in the face is not usually a feature of trigeminal neuralgia.

Trigger-point pain

You may have trigger points on your face where a touch or even a draught of air can trigger a pain. These are often around the nose and mouth. Because of these, some people do not wash or shave for fear of triggering a pain. Eating, talking, smoking, brushing teeth, or swallowing may also trigger a pain. Between attacks of pain, there are usually no other symptoms, the nerve works normally and a doctor's examination would find no abnormality.

How does trigeminal neuralgia progress?

The first attack of pain usually occurs without warning and for no apparent reason. Further pains then come and go. The frequency of the pains varies from up to a hundred times a day, to just an occasional pain every now and then. This first bout (episode) of pains may last days, weeks, or months and then, typically, the pains stop for a while.

Further bouts of pain usually develop at some time in the future. However, several months or even years may pass between bouts of pains. It is impossible to predict when the next bout of pains will occur, or how often the pain will come back. Bouts of pain tend to become more frequent as you become older.

Therefore, a typical person with trigeminal neuralgia is an older person, has classic symptoms (as described above), has no other symptoms to suggest an underlying disease such as multiple sclerosis, and finds that treatment works well.

What tests do I need?

The diagnosis of trigeminal neuralgia is often based on the typical symptoms and no tests are needed. However, a **magnetic resonance imaging (MRI) scan** may be considered in some cases, such as when:

- The diagnosis is in doubt (if the symptoms aren't typical of trigeminal neuralgia).
- An underlying cause is suspected (apart from the usual cause of a pressing blood vessel).
- Trigeminal neuralgia occurs in a younger person (younger than about 40 years).
- The condition does not improve with treatment.
- Surgery is being considered as a treatment.

What treatment options exist for trigeminal neuralgia?

The treatment for trigeminal neuralgia is usually medication to reduce the symptoms. Other options, including surgery, are considered if medication isn't very effective.

Medicines for trigeminal neuralgia

Carbamazepine is the usual treatment

Carbamazepine is normally used to treat epilepsy. Trigeminal neuralgia isn't epilepsy. However, the effect of carbamazepine is to lessen nerve impulses and it often works well for trigeminal neuralgia. There is a good chance that carbamazepine will ease symptoms of the condition within 1-2 days. You should then take it regularly to prevent the pain from returning. The dose of carbamazepine needed to control the pains varies from person to person.

It is common to take carbamazepine until about a month after the pains have stopped. The dose may then be reduced gradually and stopped if possible. After this, there is often a period when pains do not occur for some time (remission). However, the pains are likely to return at some time in the future. Treatment can then be restarted. Some people find that carbamazepine works well at first but less well over the years.

Other medicines

Other medicines may be tried if carbamazepine does not work well or causes bad side-effects. These include medicines that quieten nerve impulses - for example, **gabapentin**, **oxcarbazepine**, **baclofen** or **lamotrigine**. A combination of two medicines is occasionally tried if one alone does not help.

Normal painkillers such as paracetamol or codeine do not work for trigeminal neuralgia.

Deep brain stimulation

If you have really severe trigeminal neuralgia which has not responded to medication, you may be offered this treatment. It involves delivering an electrical pulse to a part of the brain, using a probe. A scanning technique - usually **MRI** or **computerised tomography (CT)** - is used to make sure the probe is in the right place. Because the treatment is relatively new, the risks and benefits are still under investigation and you are likely to be offered it as part of a research trial.

Surgical options for treatment

An operation is an option if medication does not work or causes troublesome side-effects. Surgery for trigeminal neuralgia falls into two categories:

Decompression surgery

This means an operation to relieve the pressure on the trigeminal nerve. An operation can ease the pressure from the blood vessel (decompress the nerve) and therefore ease symptoms. This operation has the best chance of long-term relief of symptoms. However, it is a major operation involving a general anaesthetic and brain surgery to get to the root of the nerve within the brain. Although usually successful, there is a small risk of serious complications, such as a stroke or deafness, following this operation.

Ablative surgical treatments

Ablative surgery is a procedure which destroys tissue in the body. There are various procedures that can be used to destroy the root of the trigeminal nerve and thus ease symptoms. For example, one procedure is **gamma knife surgery** (called stereotactic radiosurgery). This uses radiation targeted at the trigeminal nerve root to destroy the nerve root.

The advantage of these ablative procedures is that they can be done much more easily than decompression surgery as they do not involve formal brain surgery. So, there is much less risk of serious complications or death than there is with decompression surgery. However, there is more of a risk that you will be left with a lack of sensation in a part of your face or eye. Also, there is a higher chance that the symptoms will return at some stage in the future, compared with decompression surgery.

Are there any complications?

The pain itself can be very severe and distressing. If left untreated, this may make you feel very depressed and anxious. You may neglect to clean your teeth or not eat for fear of triggering the pain. This can then lead to poor diet, weight loss and poor mouth hygiene.

In the small number of cases where trigeminal neuralgia occurs as a result of another condition (for example, multiple sclerosis), there will usually be symptoms and complications caused by that condition.

Further reading & references

- [Trigeminal neuralgia](#); NICE CKS, December 2014 (UK access only)
- [Deep brain stimulation for intractable trigeminal autonomic cephalalgias](#); NICE Interventional Procedure Guideline, March 2011
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