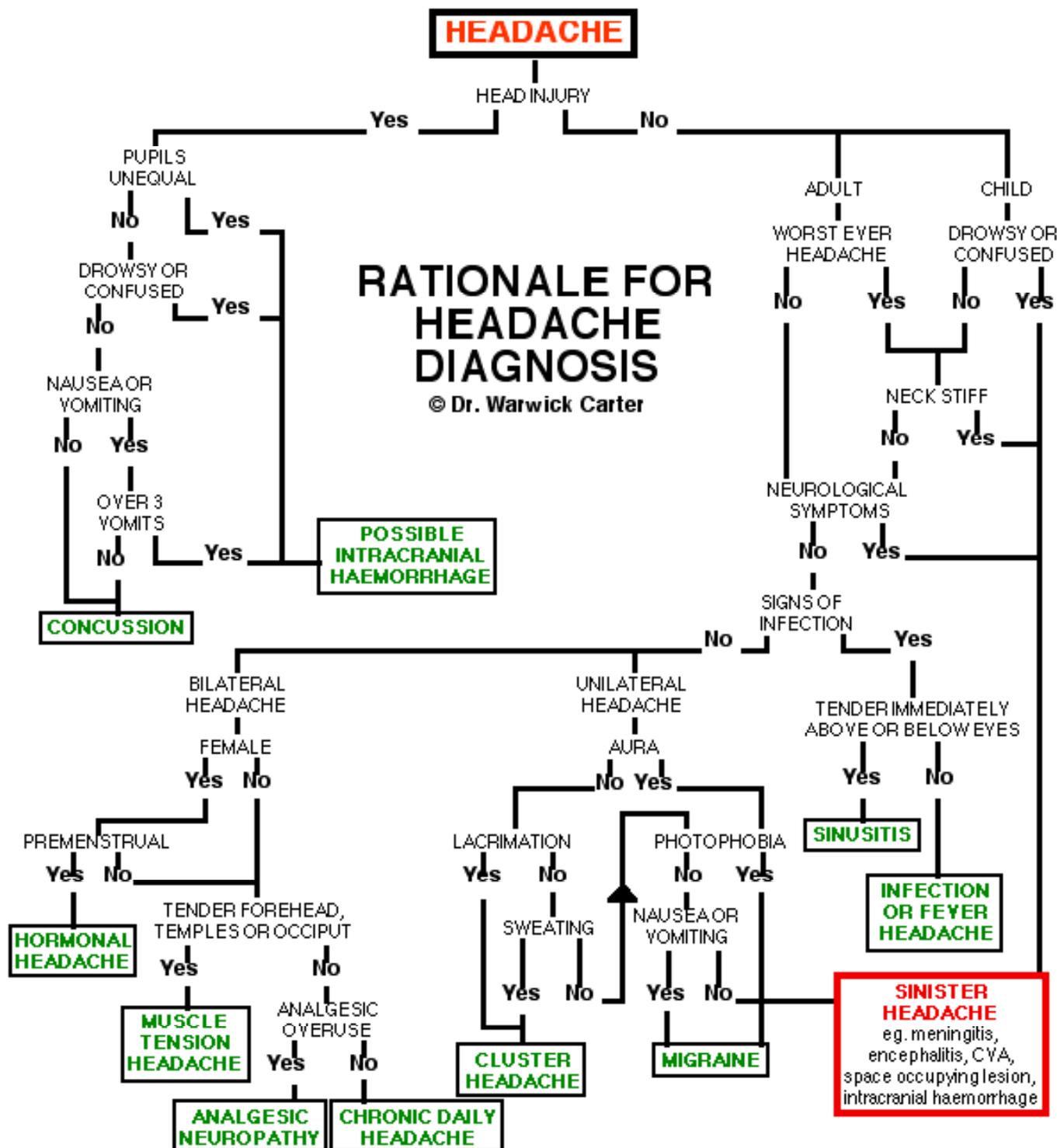


HEADACHE

Year One

Virtually every medical condition may cause a headache in some people, either directly or indirectly.



HEADACHE

PROBABLE CAUSES OF A HEADACHE

General

Bacterial, viral, rickettsial and protozoal infections of any organ but particularly CNS

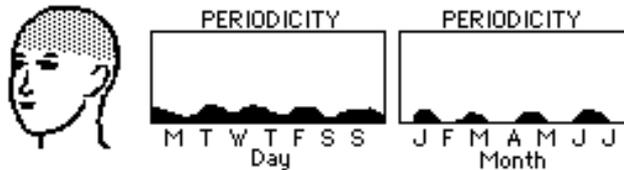
Fever of any cause

Ocular disorders (eg. refraction error, glaucoma)

Dental causes (eg. root abscess)

Tension [muscle spasm] (stress, occipital or temporal)

TENSION HEADACHE



Trauma

Fatigue (acute or chronic)

Drugs (eg. methyl dopa, other antihypertensives, anxiolytics, steroids)

Infections

Sinusitis (frontal, fever, rhinorrhoea, face ache)

Mastoiditis (tender mastoid, earache)

Meningitis (fever, neck stiffness, confusion)

Otitis media (fever, ear pain)

Encephalitis (fever, malaise, neck stiffness)

Brucellosis (fever, arthralgia, fatigue)

Cerebral abscess (preceding infection, neurological signs)

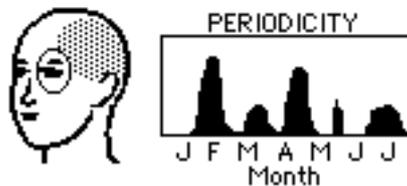
Syphilis (varied symptoms)

Dengue fever (retro-orbital pain)

Central Nervous System

Migraine (nausea, photophobia, vertigo)

MIGRAINE



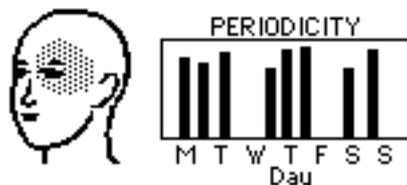
Cerebrovascular accident (neurological signs)

Cerebral haemorrhage (subdural or subarachnoid)

Trigeminal neuralgia (face, frontal, unilateral)

Cluster headaches (sudden, unilateral, lacrimation)

CLUSTER HEADACHE



HEADACHE

Cerebral tumour (neurological signs)

Neuralgia (sharp localised pain)

Prolactinoma (visual defect, cranial nerve palsy)

Psychiatric disorders (eg. phobia, anxiety)

Endocrine

Adrenal insufficiency (fatigue, nausea, diarrhoea)

Acromegaly (gigantism, vision loss, amenorrhoea)

Diabetes insipidus (polyuria, polydipsia)

Hypothyroidism (dry skin, fatigue, cold intolerance)

Phaeochromocytoma (hypertension, sweating, abdominal pain)

Menopause (flushes, lightheaded, amenorrhoea)

Syndromes

Chinese restaurant syn. (nausea, facial pressure)

Chronic fatigue syn. (fever, poor exercise tolerance)

Cushing syn. (hirsute, obese, ecchymoses, plethora)

Gradenigo syn. (diplopia, facial pain)

Post-traumatic cerebral syn. (vertigo, mental changes)

Premenstrual tension syn. (mastalgia, nausea)

Scapulocostal syn. (neck and arm pain)

Sick building syn. (fatigue, malaise)

Sticky platelet syn. (strokes, migraines)

SUNCT syn. (very brief, unilateral)

Toxic shock syn. (vomiting, diarrhoea, fever)

Vogt-Koyanagi-Harada syn. (blind, fever)

Other

Hypertension (fatigue, tinnitus)

Anaemia (fatigue, palpitations)

Coital cephalgia (post-sex headache, occipital)

Polycythaemia vera (malaise, pruritus)

Uraemia (fatigue, pruritus, thirst)

Glomerulonephritis (oliguria, malaise, oedema)

Temporomandibular joint dysfunction

Vascular anomalies

Cervical osteoarthritis

Temporal arteritis (unilateral, visual disturbances)

Glaucoma (visual disturbance)

Pre-eclampsia (pregnancy, hypertension)

SLE (rash, arthralgia)

Carotidynia (neck pain, unilateral, tender carotid artery)

Paget's disease (bone pain)

Anaphylaxis

HEADACHE

THE ABOVE LIST IS EXTENSIVE FOR THE SAKE OF COMPLETENESS,
BUT ONLY THOSE CONDITIONS **MARKED IN RED** ABOVE AND LISTED BELOW
ARE EXPECTED TO BE RECOGNISED BY A FIRST YEAR MEDICAL STUDENT.

AN EXPLANATION OF THE MOST SIGNIFICANT DISEASES LISTED ABOVE

CEREBRAL HAEMORRHAGE

A cerebral haemorrhage is a bleed into the brain from a head injury or a ruptured artery (eg. cerebral aneurysm) or vein. The result is indistinguishable from a stroke except by a CT or MRI scan. The haemorrhage may occur within the brain, or between the various layers of the meninges that surround the brain. A subdural haematoma is between the dura mater and arachnoid mater meninges. The symptoms can vary dramatically depending on the site and amount of bleeding. Surgery may be necessary to control continued bleeding within the brain. Otherwise treatment is as for a stroke.

CEREBROVASCULAR ACCIDENT

A stroke is an accident involving the blood vessels in the brain, and is technically known as a cerebral infarct or cerebrovascular accident (CVA). If a clot, or piece of material from elsewhere in the body, blocks an artery in the brain (cerebral thrombosis), or if an artery bursts in the brain, a stroke may occur. The risk of stroke is higher in those who smoke, have high blood pressure, high cholesterol levels, are diabetic, and drink alcohol to excess.

Any blood vessel in the brain may be involved, so any part of the brain may be damaged, and the area damaged determines the effects on that person's body. The symptoms can therefore be very varied. If a motor area of the brain, which controls movement is affected, the patient becomes paralysed down the opposite side of the body because the nerves supplying the body cross over to the opposite side at the base of the brain (the right side of the brain controls the left arm and leg). Other patients may lose their memory, power of speech, become uncoordinated, unbalanced, start fitting, have strange smells, hear abnormal noises or any of dozens of other possibilities. The area of the brain affected may increase as a blood clot extends along an artery, or bleeding into the brain continues.

The cause of the stroke can be determined by using special X-rays, CT scans, MRI (magnetic resonance imaging), blood tests, tests on the fluid around the brain, and measuring the brain waves electrically (EEG).

A wait-and-watch attitude is adopted in most cases, with medication given to prevent the stroke from worsening (thrombolysis) and to protect other organs. Surgery to a bleeding or blocked artery in the brain may be appropriate in some cases. Physiotherapists, speech pathologists and occupational therapists will assist in recovery. Further strokes can often be prevented by the long-term use of low dose aspirin or warfarin, which prevent blood clots. Patients who are at a high risk can also use these medications.

It will be several days or even weeks before doctors can give an accurate prognosis. The brain does not repair itself, but it can often find different ways of doing a task and bypassing damaged areas. Most improvement occurs in the first week, but full recovery may take months. Patients who become unconscious during a stroke generally have a poorer outcome than those who do not. Strokes are the third major cause of death in developed countries after heart disease and cancer.

HEADACHE

CLUSTER HEADACHE

A cluster headache is a severe, intermittent one-sided headache that occurs in clusters lasting from days to weeks. Attacks may be triggered by alcohol, stress, exercise, certain foods and glare. They are more common in middle-aged men.

Patients experience severe, one-sided pain around the eye that occurs daily for weeks and then subsides, only to flare again months later. The pain may be quite disabling, and are often accompanied by a congested nostril on the same side as the headache, a watery red eye and weakness on the affected side of the face. Unfortunately, there are no specific diagnostic tests available, and the diagnosis rests on the clinical acumen of the doctor.

Once present, these headaches are very difficult to control. Normally it is a matter of trial and error to determine the most effective treatment regime in any individual. The inhalation of pure oxygen may settle an otherwise intractable attack in a few minutes. Prevention is far better than cure, and medications such as propranolol, ergotamine, lithium and amitriptyline can be used on a regular basis to prevent further attacks. In severe cases prednisone is prescribed.

MASTOIDITIS

Mastoiditis a bacterial infection of the mastoid bone, which is a small bump of bone at the bottom of the skull immediately behind the ear that contains a microscopic honeycomb of air filled spaces. The infection almost invariably occurs as a result of infection spreading from the middle ear in patients who have recurrent or severe attacks of middle ear infection (otitis media).

Severe pain and tenderness occurs behind the ear, as well as fever, and redness over the mastoid bone. In some cases the infection will eat away the bone at the back of the ear canal and allow the pus to escape into the ear. The hole between the ear canal and the mastoid air cells, and the cavity in the mastoid bone that results from the infection, are permanent. If left untreated, the infection may spread into the brain.

An X-ray of the mastoid shows the air spaces within it to be destroyed and replaced by pus (an abscess). Potent antibiotics are then prescribed, which are sometimes given by injection. If these fail, an operation to drain the pus out of the mastoid bone will be necessary (a mastoidectomy). The prognosis is good with appropriate treatment.

MENINGITIS

Meningitis is a viral (aseptic) or bacterial (septic) infection of the meninges, membranes that wrap all the way around the brain and spinal cord, and act to contain the cerebrospinal fluid in which the brain is supported.

The diagnosis of both types of meningitis is confirmed by taking a sample of cerebrospinal fluid from the lower end of the spine (which is an extension of the brain) and examining it under a microscope for the presence of certain cells and it can be cultured to find the responsible bacteria. Blood tests also show abnormalities.

VIRAL MENINGITIS

Viral (aseptic) meningitis is a relatively benign condition that may be caught by close contact with someone who has a viral infection, or it may be a complication of diseases such as mumps, glandular fever and Herpes. It causes a fever, headache, nausea and vomiting, tiredness and sometimes muscle weakness or paralysis, and neck stiffness may be present. No specific treatment or prevention available, but bed rest, good nursing, paracetamol, and sometimes medication for vomiting are prescribed. It is rare for there to be any after-effects and patients usually recover in one or two weeks.

HEADACHE

BACTERIAL MENINGITIS

Bacterial (septic) meningitis is caught from people who are carriers of the bacteria, but the victims are usually weak, ill, under stress or have their ability to resist infection reduced in some way. The most common forms of bacterial meningitis is caused by *Haemophilus influenzae B* (HiB), while the most serious is meningococcal meningitis (caused by *Neisseria meningitidis*). It is a much more serious condition, with the severity and symptoms varying depending upon which type of bacteria is responsible. Common symptoms include severe headaches, vomiting, confusion, high fevers, patients become delirious, unconscious and may convulse. Neck stiffness is quite obvious, and patients may lie with their neck constantly extended as though they are looking up. Meningococcal meningitis is accompanied by a bruise-like rash on the skin and inside the mouth. Complications include permanent deafness in one or both ears, damage to different parts of the brain, heart or kidney damage, arthritis and the excess production of cerebrospinal fluid which can put pressure on the brain (hydrocephalus). The worst complication is intravascular coagulation, which involves the blood clotting within the arteries and blocking them.

The treatment of bacterial meningitis involves antibiotics in high doses, usually by injection or a continuous drip into a vein, and patients always require hospitalisation. Patients can deteriorate very rapidly and most deaths occur within the first 24 hours. The overall mortality rate is about 20%, although it is higher in children and with the Meningococcal form. Both common causes of bacterial meningitis can be prevented by a vaccine. The HiB vaccine is routine in childhood, but the meningococcal vaccine is an optional extra childhood vaccine or may be given during epidemics to close contacts of victims. Other forms of bacterial and viral meningitis cannot be prevented.

MIGRAINE

Migraine is a form of headache that is usually associated with other significant symptoms. They may occur once in a person's life, or three times a week; may cause a relatively mild head pain, or may totally disable the patient.

They are caused by the contraction of an artery in the brain, which may give the patient an unusual sensation and warning of an attack (aura), followed within a few seconds or minutes by an over-dilation of the artery. Excess blood passes to the part of the brain that the artery supplies and it is unable to function properly. The patient feels intense pressure, pain and other symptoms. The artery dilation may occur for no apparent reason, or be triggered by certain foods, anxiety and stress, hormonal changes, allergies, loud noises or flashing lights. The frequency and severity of migraines tends to decrease with age, an initial attack over the age of 40 is unusual, and they may cease in old age.

The effects vary dramatically from one patient to another, depending on the part of the brain involved. As well as intense head pain, most patients suffer nausea and vomiting and loud noises or bright lights aggravate the pain. Other symptoms may include partial blindness, personality changes, loss of hearing, noises in the ears, paralysis, numbness, and violence. Migraines are rarely serious, but patient may be disabled for some hours or days.

There are no specific diagnostic tests, but doctors can sometimes diagnose a migraine by their visual pattern. If the patient closes their eyes, patterns can be seen on the back of the eyelids which are actually the random activity of the nerves in the light sensitive retina at the back of the eye and in the visual centre of the brain. In normal people, a swirling smooth pattern will be seen, but a patient with a migraine will see flashes of light, bright colours and jagged patterns.

Migraines may be prevented by regular medication, or treated when they occur.

Many different drugs can be taken regularly to prevent migraines including propranolol,

HEADACHE

methysergide, calcium channel blockers (eg. verapamil), tricyclic antidepressants, NSAIDs (nonsteroidal anti-inflammatory drugs), clonidine, sodium valproate, ketoprofen and pizotifen. It is often a matter of trial and error to find the most effective one.

The longer a migraine has been present, the more difficult it is to treat. They can be rapidly cured in most patients by nose sprays, tablets or injections containing naratriptan, rizatriptan, sumatriptan or zolmitriptan. The more often these medications are used, the more effective they become. Other treatments include tablets that may be placed under the tongue or swallowed (eg. ergotamine, isometheptene), or normal pain killers (eg. paracetamol, aspirin), antihistamines, mild sedatives and anti-vomiting medications (eg. promethazine). Tolfenamic acid is an unusual nonsteroidal anti-inflammatory drug that was introduced to some countries in 2002 to treat migraine. Strong narcotic pain killers should be avoided if possible. Resting in a cool, dark room is also helpful.

Most cases can be prevented or effectively treated, but a small number are resistant to all medications.

NEURALGIA

Neuralgia is a pain in any nerve. It may be due to pinching of a nerve between other tissues (eg. between ribs with prolonged coughing), a reduced blood supply to a nerve (eg. migraine, diabetes), an infection of the nerve (eg. shingles), an injury to the nerve, or joint arthritis (eg. back arthritis causing sciatica).

Patients experience sudden, severe, shooting and often brief stabs of pain that may occur anywhere, but the chest, face and arms are more frequently affected. Permanent damage to the nerve may cause loss of sensation to the affected area.

The cause must be investigated by x-rays, and sometimes blood tests. The treatment will depend on the cause. Anti-inflammatory drugs can reduce inflammation associated with muscle strain and arthritis, and steroids can be given as injections into the damaged area. Physiotherapy is often useful.

PRE-ECLAMPSIA AND ECLAMPSIA

Eclampsia (toxaemia of pregnancy) is a rare but very serious disease that occurs only in pregnancy. In developed countries it is very uncommon, because most women undertake regular antenatal visits and checks. Pre-eclampsia is a condition that precedes eclampsia, and this is detected in about 10% of all pregnant women. The correct treatment of pre-eclampsia prevents eclampsia.

The exact cause of pre-eclampsia is unknown, but it is thought to be due to the production of abnormal quantities of hormones by the placenta. It is more common in first pregnancies, twins and diabetes. Pre-eclampsia normally develops in the last three months of pregnancy, but may not develop until labour commences, when it may progress rapidly to eclampsia if not detected.

The early detection of pre-eclampsia is essential for the good health of both mother and baby. Doctors diagnose the condition by noting high blood pressure, swollen ankles, abnormalities (excess protein) in the urine and excessive weight gain (fluid retention). Not until the condition is well established does the patient develop the symptoms of headache, nausea, vomiting, abdominal pain and disturbances of vision.

If no treatment is given, the mother may develop eclampsia. This causes convulsions, coma, strokes, heart attacks, death of the baby and possibly death of the mother.

Pre-eclampsia is treated by strict rest (which can be very effective), drugs to lower blood pressure and remove excess fluid, sedatives, and in severe cases, early delivery of the baby. The correct treatment of pre-eclampsia prevents eclampsia, and the prognosis is very good if detected early and treated correctly.

HEADACHE

PREMENSTRUAL TENSION

Premenstrual tension (PMT, premenstrual dysphoric disorder or premenstrual syndrome) may vary from a slight discomfort for a couple of hours before the onset of a woman's menstrual period to a severely distressing condition.

During the two weeks leading up to a menstrual period, the body retains fluid. If the balance between the sex hormones oestrogen and progesterone is not quite right, an excessive amount of fluid may be retained in the pelvis, brain, breasts, hands and feet to cause gradually increasing discomfort in the pelvis and breasts, with swelling of the hands and feet, pounding headaches and depression. The worst sufferers will experience abdominal pain, swollen tender breasts, anxiety, irritability and clumsiness, and may be unable to concentrate, work or exercise effectively. The most severe form is known as premenstrual dysphoric disorder when symptoms seriously interfere with a woman's lifestyle, mental and physical functioning, and relationships. Depression, very rarely severe enough to lead to suicide, and a psychosis that has been used in court as a defence for murder, can be extreme complications. The symptoms usually disappear within a few hours when the period starts.

The oral contraceptive pill or similar hormones can be used to regulate the hormonal balance and prevent excess fluid retention, and diuretics (tablets that remove fluid from the body) may be used alone or in combination with the contraceptive pill. Other medications that may be beneficial include antidepressants (eg: citalopram), vitamin B6, mefenamic acid, naproxen, indomethacin and evening primrose oil. Other approaches include a sensible balanced diet, and avoiding coffee, chocolate and rich foods in the two weeks before the period.

The majority of women can be helped adequately by good treatment.

ROOT ABSCESS

The root or pulp canal of a tooth is the channel through the base of a tooth that carries the blood and nerve supply to the tooth. It is extremely sensitive in dental procedures, and may be very painful if it becomes infected or an abscess forms. A damaged root canal may have to be cleaned out and filled if the tooth is damaged or diseased. A root abscess must be drained by drilling into it through the tooth.

SINUSITIS

Sinusitis is a bacterial or viral infection of the moist membrane that lines the air filled sinuses in the face. They lie in the skull bone below, above, between and behind the eyes and are connected together and to the nose by small holes and drainage tubes.

Some people secrete excess amounts of fluid in the sinuses because of hay fever, smoking or irritating fumes, while others may have drainage holes and tubes that are too small to cope with the secretions produced. If bacteria or viruses infect the sinus lining or secretions, sinusitis results.

Sinusitis causes thick and pus-like phlegm to drain from the nose and down the throat, the face is very painful and tender, and there is a fever, headache and tiredness. The infection may spread to the middle ear, and in severe cases, it may be necessary to insert needles through the nose into the sinuses to wash out the pus. X-rays of the sinuses shows the abnormal presence of fluid, and swabs may be taken from the back of the nose so that the type of bacteria causing the infection can be determined and the correct treatment selected.

Appropriate antibiotics are prescribed when the cause is bacterial, and other medications are used to dry phlegm and clear the sinuses. Inhalations of steam and nasal decongestant drops are beneficial. In patients who suffer from repeated attacks, surgical procedures to more effectively drain the sinuses can be performed. Untreated the infection can spread to the teeth,

HEADACHE

eyes or brain, and abscesses may form. Most patients settle quickly with appropriate treatment, but recurrences common.

TEMPORAL ARTERITIS

Temporal or giant cell arteritis, is an inflammation of medium to large arteries throughout the body, but most commonly the arteries in the temples at the side of the head. The cause is unknown but it may be an autoimmune disease, and often follows a significant viral infection.

Involved arteries become extremely tender and swollen. Symptoms depend on which arteries are inflamed, but may include headache, scalp tenderness, pain in the jaw with chewing, throat pain and vision disturbances. Less commonly a cough, shoulder pain, weakness and a fever occur. Blindness due to involvement of the arteries in the eye, and aneurysms (dilations) of arteries are complications. About half of all patients also have polymyalgia rheumatica

Blood tests (eg. ESR, CRP) are usually performed to detect the inflammation, and a biopsy of an artery will reveal the presence of characteristic giant cells. Treatment involves taking steroid tablets (eg: prednisone) for several months. It is usually well controlled and eventually cured, but recurrences when medication is ceased are common.

TEMPOROMANDIBULAR JOINT DYSFUNCTION

The temporomandibular joint is the jaw joint, and malfunctioning of this joint is a common cause of face pain. The joint lies just in front of the ear, and problems may be due to poor alignment of teeth, muscle imbalances in the face associated with emotional stress, grinding of the teeth (bruxism) or an injury to the joint. Problems are more common in women

Patients develop a tight aching pain, which spreads to the ear and across the face, is worse with chewing and may be associated with a click in the joint. With prolonged symptoms, arthritis may develop in the joint. X-rays and other tests are usually normal.

Treatment involves muscle relaxants (eg. diazepam), mobilisation of the joint under the supervision of a physiotherapist, anti-inflammatory medications and pain relievers, and as a last resort surgery may be performed. There is a good response to treatment.

TENSION HEADACHE

A tension or muscle spasm headache is due to spasm of muscles in the temples, forehead and upper neck. Stress is the most common trigger, but allergies, infections and injury can also cause muscle spasm. The muscles at the top of the neck, in the forehead and over both temples go into prolonged contraction, which tightens the scalp, causing pressure on the skull, and further increases the strain on the muscles.

Patients feel a constant unrelieved pressure across the head, sharp pains and tenderness around the hairline and neck, poor concentration, tiredness and worsening of the headache by stress, noise and glare. Massaging the affected area may give relief and aid in diagnosis.

Treatment involves the use of aspirin, ibuprofen or paracetamol, sometimes in combination with muscle relaxants. Commercially available combinations that include orphenadrine or an antihistamine such as doxylamine are useful in the short term, but often cause drowsiness. Mild heat and massaging the tense muscles will give temporary relief. Relief of chronic anxiety by talking through the problems with a doctor or counsellor, accepting help to deal with a stressful situation, and using an anti-anxiety medication may also be useful.

TRIGEMINAL NEURALGIA

Trigeminal neuralgia (tic douloureux) is an inflammation of the trigeminal nerve, which leaves the brain and passes through a hole in the skull just beside the ear. It fans out across the face, to receive sensations from the skin of the face, and to give movement instructions to the

HEADACHE

muscles in the face. Occasionally it may be caused by a brain or nerve disease such as multiple sclerosis, or a tumour that presses on the nerve, but usually there is no specific cause

Patients develop a sudden severe pain in the face which often arises beside the mouth and spreads almost instantly up to the eye, down to the jaw, and across to the ear. The pain may last a few seconds or several minutes and only one side of the face is affected. Attacks may be started by cold winds, eating, yawning, or touching the face, and they tend to come in episodes, with attacks coming every few minutes for a few days or weeks, and then disappearing for a time. Unfortunately, each successive attack tends to last longer than the preceding one, and the pain-free periods become shorter. No specific tests are available to prove the diagnosis.

Painkillers are not particularly effective, but anti-epileptic drugs such as carbamazepine and phenytoin are quite successful treatments. If these medications prove unsuccessful, surgical exploration of the nerve may find an area of compression or abnormality as a cause of the pain. As a last resort, the nerve may be destroyed to give relief from intractable pain, but this leaves the face permanently numb.

Control is usually reasonable, but cure difficult, although spontaneous, permanent cures do occur.

**ANY PATIENT COMPLAINING THAT THEIR HEADACHE IS THEIR
“WORST EVER HEADACHE” MUST BE CONSIDERED TO BE SUFFERING
FROM A SINISTER HEADACHE UNTIL PROVED OTHERWISE!**

CURIOSITY

*Snoring and sleep apnoea (brief stops in breathing during sleep) may be the cause of an early morning **headache**.*

TOTALLY, COMPLETELY AND UTTERLY USELESS INFORMATION

EAR CANDLING

*Ear candling is a peculiar form of alternative medicine in which a patient lies down on their side, and a candle is placed in the ear and lit. The most likely effect is to be burnt by falling bits of wax, but its protagonists claim it will cure everything from excess ear wax (hard to understand why when candle wax is being put into the ear) and sinusitis to **headaches** and stress. There is absolutely no evidence that ear candling has any clinical benefits.*

ADVERTISEMENT

“Carter’s Encyclopaedia of Health and Medicine” is available as an app for iPod, iPhone and iPad from Apple’s iTunes store.

Any student who would like a copy of a neurology textbook called “Rationale for the Brain - a guide to the diagnosis of diseases that may cause neurological symptoms”, can download the book for free from:

http://www.medwords.com.au/MW_Rationales.html

Assoc. Prof. Warwick Carter
wcarter@medwords.com.au