Chapter 13: Otolgia

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Most episodes of earache are caused by pathology in the ear. The diagnosis should be easy to make after an accurate history has been taken and a careful examination of the ears, nose and throat carried out.

Previous chapters in this volume have dealt, in detail, with the symptoms, appearances and treatment of ear diseases, including those in which pain is a feature. To recapitulate, Table 13.1 lists those conditions of the outer, middle and inner ear which are associated with pain.

This chapter describes the causes of pain which are apparently in the ear but are either referred from other structures which share the same innervation or those in which the nerves are inflamed or irritated.

Innervation of the ear

The ear is served not only by the fifth, seventh, ninth and tenth cranial nerves, but also by the second and third branches of the cervical plexus. The richness of its innervation presumably explains why pain referred to the ear is so common.

The exact distribution of the nerves is subject to variation and some overlap occurs (Last, 1984). Briefly, however, most of the cranial surface of the pinna, its lateral surface below the meatus and the lobule are supplied by C2 and C3 via the great auricular nerve. The lesser occipital nerve, C2, overlaps the great auricular nerve to supply the upper part and rim of the cranial surface of the pinna. The auriculotemporal nerve, a branch of the mandibular division of nerve V supplies the auricle above the meatus, the superior wall of the meatus, the skin of the tragus and the majority of the outer surface of the tympanic membrane. The auricular branch of the vagus supplies the posteroinferior quadrant of the tympanic membrane, posterior wall and floor of the meatus and a small area of the skin on the cranial surface of the pinna near the mastoid process. The facial nerve, via the tympanic plexus, probably supplies a small part of the outer surface of the drum and a small area of skin on the concha, but the details remain undetermined in man (Gray, 1973).

The mucosa of the inner aspect of the drum and that of the middle ear is supplied by the glossopharyngeal nerve through its branch to the tympanic plexus, probably assisted by the facial nerve. The eustachian tube is supplied by the pharyngeal branch of the pterygopalatine ganglion and its ostium, as well as the mastoid air cells, by a meningeal branch of the fifth cranial nerve.

In summary, therefore, the pinna is supplied by C2 and C3; the meatus by cranial nerves V, VII and X; the drum by nerves VII and X; and the middle ear by nerves V, VII and IX.
Table 13.1 Conditions of the outer, middle and inner ear associated with pain

**Pinna**
(1) Trauma - tears, lacerations, bites
(2) Haematoma, which may lead to perichondritis
(3) Infected eczema
(4) Infected preauricular sinus
(5) Erysipelas
(6) Frostbite
(7) Sunburn
(8) Chondrodermatitis nodularis chronica hellicis
(9) Infected basal or squamous cell carcinoma

**Meatus**
(1) Impacted wax. Attempts at removal with blunt instruments, wax solvents. Failed syringing
(2) Keratosis obturans
(3) Impacted foreign bodies
(4) Boils
(5) Otitis externa. Pain suggestive of fungal infection
(6) Hypersensitivity to antibiotics
(7) Malignant otitis externa. Pain indicates activity and means that antibiotics must continue
(8) Necrotizing osteitis
(9) Bullous myringitis
(10) Herpes zoster oticus
(11) Exostoses when wax and debris are impacted medially
(12) Tumours, mainly carcinoma. Pain should alert suspicion

**Middle ear**
(1) Traumatic perforations
(2) Water through perforations
(3) Haemotympanum
(4) Otitic barotrauma
(5) Serous otitis media
(6) Acute otitis media
(7) Carcinoma

**Mastoid**
(1) Acute mastoiditis. Continuing pain is an indication for drainage
(2) Bezold abscess - torticollis
(3) Zygomatic mastoiditis
(4) Exacerbations of chronic granulomatous mastoiditis
(5) Complications of cholesteatomata. Pain is usually an indication for surgery
(6) Cholesterol granuloma. Persistent pain is again an indication for surgery
(7) Wegener's granuloma
(8) Eosinophilic granuloma (Fradis et al, 1985)

**Inner ear**
(1) Noise. In noise-sensitive people, this may cause pain
(2) Tinnitus may be described as a throbbing pain
(3) Ménière's disease. Attacks may be preceded by pain and fullness in and behind the ear.
The auriculotemporal nerve also sends branches to the temporomandibular joint, the skin over the parotid and the fascia around the gland - C2 and C3. The temporomandibular joint is also supplied by the masseteric nerve, a branch of the anterior division of the mandibular nerve.

**Referred pain**

Pain is one of the most common and disturbing human experiences and it must be remembered that individuals vary widely in their appreciation of, and reaction to it, and the same individual may react in a different way to a similar pain at different times. Pain is a warning and is always real to the patient, even if the cause for each type or bout is not necessarily found. If there is no obvious local cause, then pain referred from another site should be considered.

The physiological explanation for referred pain is uncertain (Walton, 1985), but the phenomenon can probably be explained by a central summation mechanism in relation to the gate theory (Melzack and Wall, 1965). There is a widespread diffuse monosynaptic input to the cells of the substantia gelatinosa of the spinal cord, often from relatively distant afferents.

A good example of referred pain is that in which there is irritation of the diaphragm - innervated by the phrenic nerve cervical branches 3 and 4 - and this is then appreciated as a pain in the tip of the shoulder the cutaneous innervation of which is C3 and C4.

**Tonsillitis**

Tonsillitis must be one of the commonest causes of pain referred to the ear. Children find localization difficult and there is, of course, often an associated eustachian tube dysfunction secondary to the tonsillitis, which will add to the ear discomfort, and in many cases an otitis media will also be present.

Post-tonsillectomy pain varies considerably and seems to be less severe in children than adults. The average length of time for which pain was experienced in a group of 95 children was 4.9 days (Paradise et al, 1984). It is, of course, important not to assume that pain in the ear postoperatively is referred pain, and to examine the ears to exclude a concomitant ear infection.

Peritonsillar, retropharyngeal and parapharyngeal abscesses, will all cause earache, too, but should be easy to distinguish from simple tonsillitis. If trismus makes examination impossible, 12 hours of intravenous broad-spectrum antibiotics plus fluid, should reduce this sufficiently to enable adequate visualization. These abscesses need to be drained promptly to prevent the development of respiratory obstruction.

**Nasal polyps**

Antrochoanal and nasal polyps which are large enough to fill the posterior choanae or even the nasopharynx will obstruct the medial end of the eustachian tube and give rise to a feeling of discomfort in the ear.
Sinusitis may also produce a feeling of blockage in the ear when purulent secretions flow past the orifice of the eustachian tube and cause inflammation and oedema. A secondary serous otitis may develop in both conditions adding to the discomfort.

**Mumps**

Mumps is one of several infectious diseases caused by a virus and usually contracted in childhood. Pain in the ear is a common symptom and if only one parotid gland is affected and the swelling inconsiderable, the diagnosis may be missed. (Antibiotics do not, of course, affect the pain or the condition.) The incubation period is 12-28 days but most cases develop 7-18 days after exposure. When the infection is complicated by mumps labyrinthitis with vomiting, vertigo and deafness, it is most important to exclude an associated ear infection.

**Parotitis**

Parotitis in adults with pain in front of, and in, the ear used to be relatively common postoperatively, but with better hydration, dental hygiene, antibiotics and after care, it is now usually confined to debilitated, elderly and immunocompromised patients. The causative organism was commonly *Staphylococcus aureus* (Lundgren, Kylen and Odkvist, 1976), but more recently *Pseudomonas aeruginosa* (Pruett and Simmons, 1984), and anaerobic bacilli (Anthes, Blaser and Reller, 1981) have been cultured from Stenson's duct in these cases.

The apparently separate disease entity of recurrent parotitis in childhood, which usually subsides after the child is about 10 years old, may be mistaken for mumps initially. There is some evidence that this infection is related to the Epstein-Barr virus (Akaboshi et al, 1983). In severe cases, parotidectomy may have to be considered, if sialography shows definite evidence of sialectasis.

**Thyroid**

Painful lesions of the thyroid will frequently produce pain referred to one or both ears. The cause is usually obvious, but occasionally cases of subacute (de Quervain's) thyroiditis may be diagnosed as pharyngitis and referred to otolaryngologists when symptoms do not respond to antibiotics. There is usually a small firm diffusely tender goitre and a greatly increased erythrocyte sedimentation rate. The pain will usually respond to aspirin but severe cases may require steroids (The Lancet, 1986). These do not, however, alter the natural history of the disease and 10% of patients will eventually become hypothyroid. Occasionally, Hashimoto's thyroiditis is painful but this does not usually respond to steroids, although thyroxine will alleviate the pain in most cases if the dose is high enough to suppress thyrotropin secretion (Zimmerman et al, 1986). Differentiation from subacute thyroiditis may be necessary by fine needle aspiration biopsy, as both have a tendency to recur.

Haemorrhage into a cyst or nodule will cause pain which usually only lasts a few days, but fibrosis (Riedel's struma) must be differentiated from invasive malignancy. This may be difficult and operation to split the isthmus and relieve the pressure symptoms may be necessary; histology of the specimen will confirm the diagnosis (De Groot et al, 1984).
**Tuberculosis of the larynx**

Pain in the ear is sometimes found in tuberculous ulceration of the larynx (Tilley, 1919). The condition is uncommon nowadays in the UK (Bailey and Windle-Taylor, 1981), but in developing countries it is still a considerable problem. In Tanzania, for example, in 1983, Manni found that just over one-quarter of the 341 cases of untreated pulmonary tuberculosis presenting to one clinic in a single year had laryngeal involvement. Tilley (1919) recommended injection of alcohol around the superior laryngeal nerve to control the severe pain in the throat and ear, but nowadays the pain usually settles quickly once antituberculous chemotherapy has been started.

**Styloid process**

'The styloid process has been blamed for pain within the ear but we have never been satisfied that this is true' (Edwards, 1973).

In 1937, Eagle described two patients with elongated styloid processes who complained of an ache in the pharynx referred to the ear, and a sensation of a foreign body in the throat. Later he suggested that in those cases which follow tonsillectomy, scar tissue in the fossa binds the mucosa down on to the tip of an elongated process restricting movement and thus causing symptoms (Eagle, 1958). Russell (1977) advised palpation of the tonsillar fossa in these cases and if a bony protuberance is felt and touching it causes the pain, the area should be infiltrated with local anaesthetic. If this produces temporary relief of the symptoms, operative removal of the styloid process should provide permanent relief.

Eagle (1958) advocated removal of the elongated process at the same time as tonsillectomy, to prevent the pain developing, but as it only occurs in an occasional case this would appear excessive. Lindeman (1985) and Strauss, Zohar and Laurian (1985) felt that an external approach is safer as the great vessels can be viewed directly, and have found this most effective in selected cases. Elongation of the styloid process is common and in most cases must be entirely asymptomatic. However, there does seem to be the occasional patient who has suffered pain in the throat and ear for many years and may indeed have had many other operations to attempt to relieve this symptom, who will be cured by shortening of the styloid process (Baddour, McAnear and Tilson, 1978).

**Teeth**

Pain caused by diseased teeth is commonly referred to adjacent structures; the lower molars are most frequently those implicated in pain referred to the ear. Erupting teeth, caries causing exposure of the dentine, periodontal and dental abscesses may all cause 'earache' as well as pain in the tooth itself. Episodic pain arising in the teeth is rare and if there is doubt, infiltration with local anaesthetic will abolish the pain if it does come from the tooth and confirm the diagnosis. This should prevent the unnecessary extraction of otherwise healthy teeth for pain of uncertain origin.
Oral ulceration

Oral ulceration is painful locally but when the posterior third of the tongue, tonsillar region or the pharynx is involved, pain will be referred to the ear. Primary herpetic stomatitis usually occurs in children over the age of 6 months but is rare in adults. It is caused by infection with herpes simplex virus, lasts about one week and rarely recurs. Recurrent aphthous stomatitis can be classified as minor, major when scarring follows, and herpetiform. Behçet's syndrome is thought to be the multisystem equivalent of the unifocal ulceration and is characterized by orogenital ulceration, often with involvement of other systems, and is probably an autoimmune disease (Wray, 1984). There is evidence that recurrent aphthous stomatitis is related to autoimmunity (Lehner, 1968), trauma (Wray, Graykowski and Notkins, 1981), nutritional deficiencies (Wray et al, 1978), and alteration in hormone levels.

Local steroids, carbenoxolone (Poswillo and Partridge, 1984), antiseptic mouthwashes and topical analgesics are the mainstay of management. Systemic steroids and thalidomide (Bowers and Powell, 1983) should be reserved for exceptional cases.

Temporomandibular joint

The temporomandibular joint, like any other joint within the body, is subject to trauma, infection and arthritis. Not only is the joint the immediate anterior relation of the external auditory meatus, but, in addition, it is supplied by an articular branch of the auriculotemporal nerve which also supplies cutaneous sensation to a large portion of the pinna. It is not surprising, therefore, that disorders of this joint are frequently misinterpreted by the patient as earache. Rheumatoid arthritis affects the temporomandibular joint in both children and adults, occurring in up to 70% of the latter, and related to the severity of the disease generally (Chalmers and Blair, 1973). Osteoarthritis also affects the joint and is said to develop relatively frequently following significant trauma to the jaw (Norman, 1982). Sixty per cent of these people will have otalgia and condylectomy usually relieves this pain. Gout will occasionally occur, but rarely is this joint affected in the absence of others. Ten per cent of those with ankylosing spondylitis have pain in the joint and trismus (Scully and Cawson, 1982).

The vexed question of temporomandibular arthrosis is an extremely complicated subject; there is much research and large numbers of studies have been published (for example Griffiths, 1983). It is certainly a common condition affecting 15-20% of the population (Howe, 1983), commonest in the young female adult, but also occurring in children (Blake, Thorburn and Stewart, 1982) and in the older members of the population who have lost many of their teeth. The condition is associated with pain in the joint which radiates to the ear, temple, jaw and upper neck. It is made worse by eating, yawning and periods of stress. Some patients who grind their teeth (bruxism) or have violent dreams will wake with pain (Every, 1960) and a significant number will develop the condition after a course of dental treatment, when the joint has been stressed and the bite altered. Many different treatments have been based on widely different concepts of the cause, and include an explanation of the origin of the pain, simple analgesics, local heat, physiotherapy (Hargreaves and Wardle, 1983), acrylic splints, restorative dentistry to alter the bite (Thomson, 1959) and muscular exercises (Howe, 1983). A large proportion will become pain free, either because of or in spite of treatment, but there remain a few cases with persistent symptoms who may
be offered condylectomy. It is most important that these are differentiated from those patients with an allied disorder - atypical facial pain. This latter condition is related to emotional stress and adverse life events and should be treated with long-term antidepressants or dothiepin hydrochloride; operative intervention is specifically contraindicated (Feinmann and Harris, 1984).

Costen's syndrome still appears in many textbooks (Costen, 1934). He described a syndrome of pain and fullness in the ear associated with hearing loss, tinnitus and vertigo, which he attributed to wearing of the glenoid fossa causing pressure on the auriculotemporal nerve by the displaced condyle, and which in turn erodes the tympanic plate and compresses the chorda tympani. The eustachian tube is compressed by the pterygoid muscles causing vertigo by alteration in the middle ear pressures. These views were accepted by some authors, especially in the USA, and Pinto (1962) has even described a fibroelastic ligament which passes from the temporomandibular joint capsule to the head of the malleus whose movement causes deafness. This syndrome is not usually accepted now and Brookes, Maw and Coleman (1980) were unable to find one case out of 45 which satisfied the criteria.

**Myocardial ischaemia**

Pain in the ear related to episodes of exercise and stress, with angiographic evidence of coronary artery disease and brought on by an exercise treadmill, has been described (Bryhn and Hindfelt, 1984), although this presentation in isolation must be very rare.

**Malignant disease**

The most important cause of referred pain to the ear which must be excluded in all cases is a malignant tumour. The commonest 'silent' neoplasm causing earache is one in the pyriform fossa, but those in the glottis, supraglottis, postcricoid region, posterior pharyngeal wall, tonsil, posterior third of the tongue, parotid and nasopharynx may do so. All these sites must be inspected and palpated, if necessary under anaesthesia, and biopsies taken of any suspicious areas, so that treatment can be started as early as possible to relieve the patient of his pain and, if possible, cure his disease.

Unfortunately, one of the most difficult types of earache to treat is that caused by a mass of malignant glands in the neck. A radical neck dissection should be performed, if possible, to include the parotid gland in continuity, when indicated. If an area of skin is involved this should be excised and cover provided if necessary by a deltopectoral flap. It may be justified to excise a length of the carotid artery and replace it with a Teflon or saphenous vein graft (Lore and Boulos, 1981) to clear the disease, because it is usually impossible to control the pain in these cases adequately with drugs and it may take the patient weeks, or even months, to die.

**Pain of nervous origin**

**Herpes zoster oticus**

Ramsay Hunt was the first to describe this disease in 1907 and he suggested that the geniculate ganglion was the site of the inflammation. This has been queried by Dawes (1963),
who suggested that the syndrome is a zoster lesion of more than one cranial nerve. At post-mortem, however, in a typical case, the geniculate ganglion showed unequivocal pathological changes consistent with previous herpetic inflammation (Aleksic, Budzilovich and Liebermann, 1973). Hunt described preherpetic pains as sharp, stabbing pains in and around the ear for 3-4 days before the eruption appeared, although they have been reported as lasting up to 3 weeks before the vesicles develop (Juel-Jensen et al, 1970). The pinna may be hyperaesthetic and pain may be severe enough to be called preherpetic neuralgia (Harrison, 1954). The diagnosis at this stage may be very difficult, but if careful and repeated examination fail to reveal any other cause for earache, this in itself should suggest the diagnosis, which will become obvious when the vesicles appear. In some cases, the pain subsides when the eruption develops, but in most it will persist for days, weeks or even months after wards, when it is then called postherpetic neuralgia.

**Glossopharyngeal zoster**

This has been described (Clark, 1979) in a patient who had been exposed to varicella and became ill. He developed vesicles on the posterior third of the tongue only, with associated severe pain in the ears and rising varicella virus titres.

**Postherpetic neuralgia**

The inflammatory process associated with infection of the first sensory neuron by the varicella zoster virus is followed by a certain amount of destruction which leads inevitably to disordered sensations in the affected area. The characteristic cutaneous scars will map out the area involved and that which follows geniculate zoster or the Ramsay Hunt syndrome usually covers the concha, helix, tragus, antitragus, plus a small area of the cranial surface of the pinna behind the lower portion of the concha (Aleksic, Budzilovich and Liebermann, 1973). In many cases, the disordered sensation following varicella zoster virus infection will be mild and acceptable to the patient. In a proportion, however, which rises with increasing age, the combination of stabbing burning pains plus anaesthesia becomes a serious problem and this is then called postherpetic neuralgia. In mild cases, a detailed explanation of the mechanism helped by a mild antidepressant will suffice. Some patients, however, are driven to the verge of suicide by this pain especially if they are unfortunate enough to have an added ipsilateral facial palsy and a sensorineural hearing loss.

Many different treatments have been tried over the years with varying degrees of success. Taverner (1960) found local ethyl chloride spray very effective in resistant cases and Nathan and Wall (1974) used prolonged electrical stimulation to good effect. The local application of a solution of idoxuridine 40% in dimethyl sulphoxide to the vesiculated area is said to shorten the length of time pain is suffered (Juel-Jensen et al, 1970). The use of intravenous acyclovir certainly reduces the pain of varicella zoster virus infection initially, as well as preventing new lesions and promoting healing, but was said not to influence the proportion of patients developing postherpetic neuralgia (Peterslund et al, 1981; Bean, Brain and Balfour, 1982). If, however, it is given orally within 24 hours of appearance of the vesicles (Finn and Smith, 1984) it seems to be effective in stopping its development.
**Trigeminal neuralgia**

Trigeminal neuralgia is characterized by frequent paroxysms of pain lasting 10-30 seconds, triggered by moving or touching the face, more lower than upper, more right than left, in women more than men and in the elderly more than the Young (The Lancet, 1984). Carbamazepine will frequently control the attacks but, if it does not, or if the pain recurs, surgery is indicated. The choice is wide - from local block to section of the sensory root affected - all of which unfortunately inevitably produce anaesthesia which may be nearly as distressing as the original pain, the so-called anaesthesia dolorosa (Walton, 1985). There is increasing evidence that at least some cases are caused by compression of the nerve by vascular loops and abnormalities, and operations to relieve these compressions, first described by Gardner and Miklos (1959), are becoming increasingly common and apparently effective (Richards, Shawdon and Illingworth, 1983).

**Glossopharyngeal neuralgia**

This is much less common than trigeminal neuralgia, seen mainly in those over the age of 50, occurring twice as often in women as men and affecting the right side twice as often as the left (Edwards, 1973). It is virtually always unilateral, with paroxysms of pain of a stabbing or lancinating nature. These usually originate in the back of the tongue, radiating to the external meatus, angle of the jaw and even deeply into the ear and strike every few minutes. The spasms rarely last more than one minute each but may be repeated for as long as several hours without a break (Chawla and Falconer, 1967). Attacks may be precipitated by swallowing, coughing, sneezing or turning the head and occasionally the tragus is a trigger zone; the ear may be sensitive between attacks (Walton, 1985). Unusually attacks are associated with syncope (St John, 1982) when it is suggested that there is vagal involvement as well. The diagnosis has to be made entirely on the history as there are no abnormal physical signs and no specific pathology in the nerve has been found. The diagnosis may be confirmed by spraying the throat with topical anaesthetic which will relieve the pain, briefly (Bonica, 1984).

Carbamazepine 100 mg three times daily increasing, if necessary, to as much as 200 mg four times daily will control the paroxysms of pain in many cases, but, if the attacks recur subsequently, control is much less likely. The glossopharyngeal nerve may then be sectioned and avulsed in the neck as first described by Sicard and Robineau (1920), but recurrence often occurs following this operation (Chawla and Falconer, 1967). Jennett and Galbraith (1983) recommended sectioning of the ninth nerve in the posterior fossa or its tract in the medulla as the first and definitive procedure. They also suggested sectioning the upper two rootlets of the vagus, as described by Dandy (1945) and advocated by Chawla and Falconer (1967), because these carry sensory fibres to the ear. Recently, it has been suggested (Morales et al, 1977) that some of these cases are caused by vascular compression of the ninth nerve. Interposition of a prosthesis between the nerve and the vessels is then said to relieve the symptoms.

**Idiopathic geniculate neuralgia**

This rare condition presents as severe, brief, episodic pain deep in the auditory meatus. It may be relieved by dividing the nervus intermedius (Hannington-Kiff, 1974). Attacks may
be triggered by touching the external meatus and a dull background pain may persist between attacks (Dubuisson, 1984).

**Cervical spine**

In degenerative or neoplastic disease of the upper cervical spine, when C1, C2 and C3 roots are compressed or distorted, pain may be felt in the neck, occiput or mastoid area (Dubuisson, 1984). The pinna, but not the meatus, and the lower border of the jaw are commonly affected on one or both sides, depending on the site and severity of the disease.

Upper cervical or occipital neuralgia is usually associated with upper cervical root damage and causes either paroxysms of pain lasting from minutes to hours, or constant pain. Tenderness or hyperaesthesia in the occiput or over the mastoid region is sometimes present.

**Migraine**

Classical migraine with its aura, followed by a throbbing unilateral headache, associated with vomiting, is easy to diagnose from the history. Less clear cut are those cases where the temporal or postauricular area are involved (Delession, 1980), and which may be preceded by tinnitus or rarely by auditory hallucinations. Again, the episodic nature with complete freedom from pain and lack of signs in between attacks should confirm the diagnosis.

**Periodic migrainous neuralgia**

This is another condition which relies particularly on taking an accurate history for its diagnosis, and was first clearly defined by Harris (1936). The patient may well have been referred as a case of sinusitis or ear infection which has persisted or recurred despite treatment. The attacks are, however, quite classical and show a remarkable similarity on with another and, indeed, from one patient to another (Edwards, 1973). The time of onset, length of time to achieve maximum severity, length of attack, the severity of the pain and area involved are almost identical. These attacks occur in bouts or clusters, lasting 30 minutes to 3 hours, once or twice per day, more commonly at night than during the day and the bouts may be separated by periods of up to several months which are free from attacks.

The pain is severe and constant, unlike the throbbing pain of true migraine. It is usually centred on or near the eye but radiating to the cheek, ear or temple, and may be associated with an ipsilateral red eye and nasal obstruction. Hence the confusion with sinusitis. The pain can usually be prevented by taking ergotamine tartrate half an hour before the expected onset. It is not possible to take this every day, however, because it causes peripheral ischaemia. Recently prophylaxis with pizotifen 1.5 mg daily appears to be even more effective.

**Acoustic neuroma**

Headache is common in patients with acoustic neuromata, occurring in 73% of late cases (Ellis and Wright, 1974) and 20% of those less advanced (Hard and Davenport, 1981).
Pain localized to the ear is only occasionally seen but it is sometimes described as fullness and so great care must be taken to differentiate these cases from those of Ménière's disease.

**Thalamic syndrome**

The thalamic syndrome is usually caused by an infarct or tumour in the posterolateral thalamus, which produces a diminution in sensation on one side of the body. During recovery some patients will develop a particularly disagreeable gnawing, crushing, pain which is constant, on the contralateral side (Levin, Ramirez and Katz, 1983). This is pain where there is no peripheral stimulus and is most often felt in the side of the face (Walton, 1985).

**School avoidance**

Occasionally, an older child will be brought to the clinic with a history of recurrent attacks of earache, severe enough to cause several days absence from school. The tympanic membranes and hearing are normal at presentation, but there is usually well documented evidence of ear infection and significant hearing loss in the past. The child's general practitioner may, unfortunately, have allowed the situation to continue by simply issuing another prescription for antibiotics, assuming there to be yet another ear infection present. It is most important that, rather than for example arranging to insert ventilation tubes as a next step, the parents should be asked to bring this child to the clinic next time he or she has an earache. This in itself may be curative as the child realizes that examination will reveal normal ear drums and no others cause for the pain. If the child does re-attend, and it is pointed out to the family that the ears are normal, the excuse for staying away from school is lost and the problem usually resolves itself.