

## Ear problems in the cat

Most animals suffer from diseases of the ear and the cat is no exception. It is unfortunate that some rather generalised names get tagged on to ear diseases, eg. 'canker' which is not a specific disease but covers any ear abnormalities. Careful diagnosis of the exact problem will ensure the most beneficial treatment. To understand some of the problems it is first necessary to know something of the fundamental anatomy of the ear.

It is easy to think of the ear as merely comprising the visible paired appendages which stick up either side of the head plus a hole which disappears into some mysterious cavity in the skull. In fact the visible parts are perhaps the least important! The ear is divided into three parts - external, middle and inner.

### External ear

This comprises all parts of the ear, visible and invisible, from the tip of the ear flap to the ear drum (tympanic membrane). The ear flap (pinna) is stiffly erect in the cat, unlike the dog; it comprises a cartilaginous plate which is slightly convex on the outer aspect and concave on the inner surface; this cartilage is covered by fine skin bearing shortish hairs on the outer surface and on the inner by fine skin which is closely adherent to the underlying cartilage with hair only at the periphery.

The vertical canal when normal should have very few hairs, be faintly pink to parchment in colour, have no obvious accumulation of dirt or wax and have a faintly glistening-but-not-moist appearance. Ear wax in cats (cerumen) is of a dark brown colour; this can be mistaken by owners for dried blood when it is present in excessive quantities.

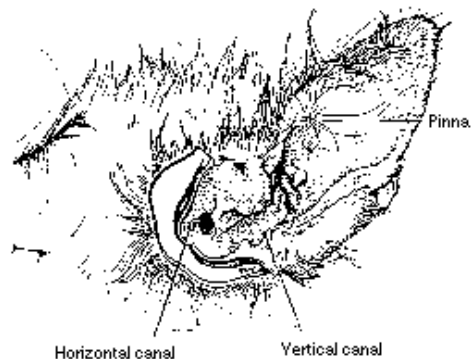


Figure 1: External ear, vertical & horizontal canals

Because breeders have not developed varieties of cat with any altered ear carriage, (with the exception of the Scottish Fold), some of the canine ear problems eg. caused by poor ventilation, do not arise in the cat. Because the ear drum is tucked away round a corner, nearly 1cm from the bottom of the vertical canal, it is most unlikely that it will be reached by normal cleaning methods so that damage is virtually impossible unless someone uses violence and most untoward zeal. For the same reason, however, drainage from the ear is poor and any abnormal secretion will collect at the bottom of the vertical canal and in the horizontal canal and be unable to get away, hence the need for surgical treatment in a small proportion of cats.

The normal lining of the ear is really only a prolongation of the skin and has the same component layers including a few hair follicles and sebaceous glands. A few wax-producing (ceruminous) glands are present and these may become hyperactive in disease states. This integument is closely adherent to the underlying cartilage and it should be only a quite thin layer of tissue; again, in chronic disease it becomes grossly thickened.

The next part is the ear canal which is vertical where it leaves the pinna; it is roughly funnel shaped, about 1.5cm long and is covered by fine almost hairless skin which is normally slightly waxed (not waxy) in appearance; there are numerous projections and furrows in the canal, particularly in its upper part, and this is important when we come to consider disease of the external ear. The deeper part of the external canal becomes more tubular in shape and then turns sharply inwards (medially) at almost a right angle, to form the horizontal ear canal (about 0.75-1cm) which terminates at the tympanum or ear drum. This is the limit of the external ear.

### Middle Ear

The middle ear comprises the tympanic cavity, bounded externally by the drum and containing the three auditory ossicles (small bones) with the delightful names of incus (anvil), stapes (stirrup) and malleus (hammer).

### Internal ear



The internal ear is enclosed in the petrous temporal bone and contains the delicate organs of hearing and balance including the semi-circular canals (balance) and organ of Corti (hearing). It is this latter which is often defective in congenital deafness of some white cats.

### Ear problems

The external ear, and then only part of the vertical canal is the only part which can be examined visually, although the deeper section of it can be seen very adequately with an otoscope. The horizontal canal and tympanum can usually only be seen in the anaesthetised cat when the pinna can be pulled outwards in such a way that the right angled bend is largely straightened out; this is a job purely for the veterinary surgeon.

Diseases of the external ear comprise by far the largest group in felines.

### Ear flaps or pinnae

**Wounds:** Most wounds of the ear flaps are due to bites from other cats and are therefore nearly always infected. They are dealt with routinely but as antibiotic therapy is wise in most cases, this is an occasion for veterinary advice. Because wounds through or near cartilage may be slow to heal, early treatment is advised.

**Haematoma:** A haematoma is really a large blood blister and is due to rupture of a small blood vessel with resulting haemorrhage between skin and cartilage, usually on the inner, concave, side of the ear. Rupture of the blood vessel is usually caused by the cat itself violently scratching its ears and this is usually due to infestation with the ear mite, *Otodectes*.

The lesion is usually noticed quite suddenly and in most cases has obviously developed quite quickly. The swollen ear flap is obvious and the cat shows discomfort by the now very heavy flap by holding the ear outwards and may even tilt its head to the affected side; occasionally gentle shaking is seen. It is an uncomfortable rather than painful condition.

So far as treatment is concerned, there are two aspects to deal with, the haematoma itself and the underlying cause. It is essential that whatever has caused the cat to scratch in the first place must be diagnosed and dealt with. If left alone, the blood in the ear flap will separate after a few days into serum and clot and will gradually be absorbed over a period of 10 days to 6 weeks. Unfortunately, some scarring takes place during this process and causes deformity of the ear flap resulting in a 'cauliflower' ear. Various operations can be performed to remove the blood and try to preserve the shape of the ear, these meet with varying degrees of success.

**Solar dermatitis:** This is caused by exposure to the sun and occurs mainly in cats with white/pale ears. In the early stages the skin may only look pink and scaly, but as the condition progresses the area becomes very crusted and eroded. The cat is often irritated by the lesions and it may shake its head and cause bleeding from the ear tips. In severe cases, a malignant tumour (squamous cell carcinoma) can develop at the site. The best advice for early prevention is avoidance of sunlight, especially between the hours of 10.00am and 3.00pm. In affected cats, surgical amputation of the ear tips is the treatment of choice. The end appearance is usually quite acceptable and has no detrimental effect on the cat.

**Sarcoptic mange:** This may cause loss of hair on the convex surface of the pinna as well as over the temples, and is usually very itchy. It will need veterinary treatment.

**Other parasites affecting the ears of cats:** The harvest mite, *Trombicula autumnalis*, can be a seasonal problem. In the autumn the larval form parasites cats. The larva is visible as an orange 'pinhead' on the ears, face and feet of affected cats. It can cause local irritation. Treatment consists of antiparasitic powders/sprays. If itching is severe, a short course of glucocorticoid may also be given.

The rabbit flea, *Spilopsyllus cuniculi*, has also been reported on the ears of cats - presumably picked up during hunting forays! The treatment is the same as for *Trombicula* species.

**Autoimmune skin disease:** This is a very rare skin disorder which can lead to crusting lesions of the ear tips and nail beds. Consult your veterinary surgeon for advice.

### The vertical canal

**Parasitic otitis:** This is by far the commonest ear disease of cats and is extremely widespread no matter how well looked after the cats are. The causal parasite is *Otodectes cynotis*, one of the mange mites, and is just visible to the naked eye as a dirty whitish speck, often actively moving. Very large numbers of these mites are found in ears, even

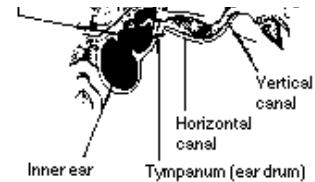
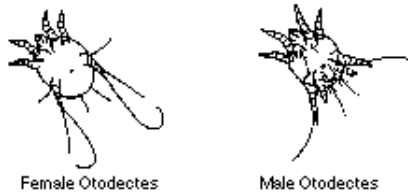


Figure 2: Middle ear

of young kittens. The whole life cycle, which takes about 3 weeks, occurs in the ear, from egg laying to death of adults. Mites are believed to live off the host only a fairly short time (10-20 days). Advantage is taken of the knowledge of the life cycle to time treatments appropriately.



**Figure 3: Male and Female Otodectes**

Otodectes is a particularly difficult mite to kill and there are two essentials when finding the ideal medication; one is that it shall kill the harmful organism (whether bacterium, virus or parasite) quickly, and the second and equally important, that it shall neither harm or irritate the host tissues. If left untreated, complications may occur eg. secondary infection with pus-producing germs, haematoma due to scratching or chronic thickening of the ear lining.

Effective treatment must aim at killing and/or removing every mite and returning the lining of the ear to normal. Very gentle, but thorough, use of pledgets of cotton wool on thin forceps or wound round a thin stick, dipped in the chosen dressing and then used to remove debris and parasites is required - remembering the folds in the vertical canal mentioned earlier. It may be necessary to use 10-12 fresh pledgets of cotton wool to deal with one badly infected ear effectively. Great gentleness is needed if the lining of the ear is not to be damaged. If an owner has any qualms about this, it is far better to let a veterinary surgeon do it and the choice of a suitable dressing is always best left to professional advice.

Treatment need not be very frequent; daily dressing for mites does more harm than good. Severe cases will need to be dressed at 4-5 day intervals on 3 or 4 occasions, thereafter a periodicity of 7-10 days is adequate. Mild cases can be dealt with by weekly dressings from the outset. In all cases treatment must extend over at least 21 days, preferably 28. This periodicity and total duration will ensure that any larvae or nymphs deriving from eggs hatched since the previous dressing will be killed before they themselves can lay eggs. It is also advisable to treat the cat's fur with a parasiticide to kill any mites present on the cat outside the ears. Some cats salivate copiously during or even in anticipation of treatment; this is usually a purely nervous reaction.

At the end of treatment the lining of the ear canal is often left in an abnormally dry condition. The use of a few drops of liquid (medicinal) paraffin in the ears once weekly will correct this and seems to have some effect in preventing re-infestation. All cats in a household should be treated as the mite is very contagious.

**Suppurative otitis:** The ears of kittens and cats are liable to infection from pus producing organisms either as a primary condition, seen especially in kittens, or secondary to otodectic infestation. In either case, treatment is a matter for the veterinary surgeon as antibiotics will be needed. The primary infection in kittens can make them quite ill; they look extremely miserable with the ears held outwards and downwards and pus is sometimes literally pouring out of them and matting the surrounding fur. Prompt treatment is needed.

### The horizontal canal

Obviously the diseases of the vertical canal already mentioned do not stop short at the level of the annular cartilage; there is often extension round the bend. No attempt should be made by an untrained person to clean the horizontal canal; expert knowledge of anatomy is needed for this to be done safely and effectively.

A tumour which is virtually specific to the cat, a carcinoma of the ceruminous glands, sometimes occurs and it can spread to other parts of the body. It usually arises in the horizontal canal, often quite near to the drum, but may be seen during auroscopic examination if it is protruding into the vertical canal.

### Middle ear disease

In view of the fact that balance is often affected in cases of middle ear disease and that the organ of balance is situated in the internal ear, we ought perhaps to speak of internal ear disease as well in this context; it is, however, usually referred to as middle ear disease. This condition is due to bacterial infection and most people tend to assume that it must be connected with similar infection in the external ear; whilst this is usually true in the dog, it is not true in the cat.

Middle ear disease often exists in combination with perfectly normal external ears so do not dismiss the idea of a deeper infection just because no abnormal discharge is seen. such infection may be referred to as occult (hidden) otitis media. It is suggested that infection may reach the middle ear via the Eustachian tube (running between the pharynx and the tympanic bulla); this hypothesis is supported by the finding of *Pasteurella multocida* in some middle ear cases and this organism can be isolated from 94% of feline throats.

The signs seen include difficulty in balancing, a tendency to sway or stumble, sometimes circling and often head tilt. Because there is no external sign of infection, positive diagnosis can be difficult as the ear drum often remains intact and in any case the type of pus produced in the middle ear is semi-solid in consistency. X-rays occasionally help.

Treatment is not easy. Antibiotics by the usual routes are not always effective and attempts have to be made to irrigate and introduce antibiotic into the tympanic bulla itself; this is not an easy job for the surgeon. A permanent head tilt may be left even after fairly successful treatment.

### **Aural resection**

This is an operation which is occasionally needed in cats to treat external ear disease which results in chronic thickening of the lining or to get at tumours arising in or near the horizontal canal. The result of the operation is to draw the sides of the vertical canal away from each other to relieve friction, permit drainage and dressing or to excise a tumour.



**Figure 4: Ear after aural resection**

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