Management of otitis externa and otitis media in dogs

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Lydia Payne VN, takes an look at the techniques used for managing ear diseases in dogs, and the role of the nurse clinic

NURSE clinics set up to manage ear cases can be very useful to a busy vet in practice. A 10-minute veterinary consultation is often not long enough for the vet to take and read cytology and effectively clean an animal’s ears, as well as giving a booster, worming tablet, discussing neutering, flea treatment and insurance and answering 20 questions about another dog they didn’t even bring in for examination. This is where the nurse becomes invaluable. Although it is the vet’s responsibility to prescribe medication for the case, the practice nurse can undertake most other aspects of management.

Otitis accounts for a very high proportion of cases seen in first opinion practice and is a disease in which the practice nurse can play an integral part in improving management, speed of resolution and in helping to reduce relapse rates. It is important to have an appreciation of the aetiology and pathogenesis of the disease in order to offer advice to owners and manage the disease well.

Otitis can be divided into three components: primary, perpetuating and predisposing causes. Primary causes are skin conditions that affect the ear and are present in every case. Allergy, especially atopy, is the most common primary cause of otitis, but hypothyroidism, neoplasia, parasites and autoimmune disease can also be the primary cause.

Perpetuating and predisposing causes are, in fact, not causes of otitis, but generally make the disease more complicated and more difficult to manage. Predisposing factors include poor conformation of the ears, excessive swimming with the head under water, effects of treatment,
obstructive lesions and systemic disease.

Perpetuating causes are usually infection and chronic changes to the ear canal and otitis media.

**Ear plucking**

Controversy surrounds whether plucking ears helps prevent or creates ear disease. The author would suggest that ear plucking in a dog without primary disease is acceptable, and, as part of normal grooming is totally appropriate. However, in a dog with underlying disease, such as allergy, plucking can precipitate disease by traumatising the delicate ear canal lining and, although it can produce benefits in improving ventilation to aid in ear cleaning, it should be undertaken with care.

At the time of initial examination the owner should be questioned to ascertain if the animal is head shaking, has a head tilt or is pawing at the ears to get a basic idea as to the extent of the disease. The pinna should be examined on both sides to ascertain if the disease is present in this area and also to check that there is no matted hair making the pinna painful. It is also important to check both ears, as there can be a different problem in each ear.

**Cytology**

Cytology is a very simple procedure, which can be undertaken by a practice nurse, and is a valuable tool in diagnosing and managing ear disease. There are many courses available to help you with your cytology skills. Cytology of the ears can be performed by gently rubbing a cotton bud around the canal wall to collect some of the discharge. The discharge can then be rolled onto a glass microscope slide. The slide should then either be air dried or dried with a heat source such as the radiator or a hairdryer. In our practice we have a wall-mounted hand dryer in our lab area that is used to dry slides. Once dry, the slide should be stained with Diff Quik and viewed under the microscope.

The most common findings on cytology from the ear canal are listed in Figure 1 shows pictures of each cytological finding, as seen when looking down a microscope. From the cytology results you can decide if bacteriology is necessary. If cocci are present on cytology these will almost always be *Staphylococcus* spp or *Streptococcus* spp. These Gram-positive bacteria can be treated with any one of a number of empirical drugs. If rods are present on cytology then the infection is almost certainly going to be Gram-negative. These organisms have a much more unpredictable sensitivity and therefore cultures are recommended in all cases.

Once you have the results of the cytology you can introduce an otoscope into the ear. Routine cleaning and cold sterilisation of the otoscope heads between patients is paramount to avoid cross contamination. You should examine the ear canal carefully to check the lumen for hairs, foreign bodies and the type and amount of discharge; the colour of the discharge may also give you some clues.
The canal walls should be checked for ulceration, polyps and the degree of erythema and hyperplasia. Check the tympanic membrane is present and is normal - what can you see behind it? If the tympanic membrane is ruptured care must be taken when choosing a product to go into the ear canal, as certain products will damage the middle ear. Figure 2 shows a normal ear canal with an intact tympanic membrane and Figure 3 shows some diseased ear canals as viewed with a video otoscope.

You now have a good idea as to the extent of the disease. In the case of normal canal cytology and tympanic membrane, the ear canal can be flooded with a neutral ear cleaner, massaged for approximately five minutes to loosen debris and then wiped with a large piece of cotton wool. In cases of Gram-positive bacterial infection an acidic cleaner, such as acetic, lactic or salicylic acid should be used. However, care is needed in these cases if the canal is ulcerated as these products may cause irritation. The best cleaner for an ear canal infected with *Malassezia* is a product containing boric acid. For Gram-negative infections, a Triz EDTA and aqueous antibiotic additive should be used.

**Ear cleaning techniques**

The owner should be instructed on how to clean the ears at home, as routine cleaning will help maintain a healthy ear canal. In more severe cases of otitis externa and in all cases of otitis media, a general anaesthetic should be administered to flush the ear canal more thoroughly. To successfully treat an otitis media the middle ear must be flushed as well as the external canal. If the middle ear is not flushed properly the tympanic membrane can heal over and trap the infection in the tympanic bulla. In effect this creates an abscess, which, in time, will rupture through the tympanic membrane and re-infect the external ear canal as well as being very uncomfortable for the animal. If you cannot visualise the tympanic membrane you will need to flush assuming that it is intact until you can visualise the area - until you are sure, do not use any ototoxic products.

The equipment needed for a full flush under general anaesthetic is listed in .

In the case of a ruptured tympanic membrane, the fluid used in the flush may come down the nose via the eustachian tubes. A cuffed ET tube must be placed to avoid aspiration pneumonia during flushing. A sandbag placed under the neck will also aid drainage.

To flush the ear canal you should warm to body temperature and apply a suitable ear cleaner (decided using the cytology result). Allow the product to soak for 10 minutes in the ear canal, occasionally massaging the canal from the outside to break up the debris and allow the cleaner to seep fully into the tympanic bulla. Wipe the top of the canal with small amount of cotton wool to remove gross soiling. Use a suction unit or syringe and a Spreul needle to remove the cleaner from the canal. You should now reassess the canal and the tympanic membrane. If the tympanic membrane is intact, but an otitis media is suspected, a myringotomy should be performed in the area shown in Figure 2. Either through the myringotomy incision or through the pre-ruptured
tympanic membrane a soft tube can be passed gently into the tympanic bulla (a 6fg urinary catheter with the fenestrated end cut off is ideal).

**Delicate structures**

The soft tube should be angled downwards to avoid damage to the delicate structures of the middle and inner ear. Gently tapping on the surface of the tympanic bulla will enable you to assess the middle ear. This is a relatively insensitive test to find out if there is granulation tissue lining the tympanic bulla. Granulation tissue will feel slightly spongy and bone will feel very hard. Granulation tissue present in the tympanic bulla represents severe or chronic disease and usually a severe loss in hearing. In most cases this damage is irreversible.

The external and middle ear should be flushed with warm water until it runs clear. All water should be removed from the canal before an acid-based drying agent is used (if there is ulceration present these products may cause further irritation). The middle and external canals should now be dressed with a suitable medicated solution (decided using the cytology results). In patients that are difficult to medicate an earwick can be placed at this point. The earwick will only need to be rehydrated every 48 hours as apposed to some of the other treatment options that would need to be applied daily or twice daily. After every flush, unless contraindicated, all patients at Rutland House Referrals are given intravenous steroids after flushing has been completed.

Once recovered from the general anaesthesia the animal can be sent home with an appropriate cleaner, medicated solution and systemic treatment if necessary.

If cultures were taken in all cases except where an earwick was placed, the drugs can be changed once results are reported.

Reassessment should be undertaken after three to four weeks on appropriate therapy, with a view to repeat flushing. It may be necessary to repeat flushing on several occasions, depending on the infective agent.

Treatment of otitis with prescription drugs should be maintained until negative cytology is achieved. Animals that have been diagnosed and treated for ear disease and have negative cytology should be maintained long term on an ear cleaning product. The owner should be asked to visit regularly for repeat cytology samples by the practice nurse, this will enable you to minimise the risk of recurrence of the disease, and thus aid in the long-term management of the disease.

Once active infection is under control and cytology is normal, it is important that the underlying cause is determined and that routine cleaning by the owner and cytology by you continues long term to prevent recurrence.
Figure 1. A) Cytology showing Malassezia (yeast).
Figure 1. B) Cytology showing cocci-shaped bacteria.
Figure 1. C) Cytology showing rod-shaped bacteria.
Figure 2. Normal ear canal and tympanic membrane.
Figure 3. A) Ear canal infected with Malassezia.
Figure 3. B) Ear canal infected with Gram-positive bacteria.
Figure 3. C) Ear canal infected with Gram-negative bacteria.
<table>
<thead>
<tr>
<th>Malassezia (yeast)</th>
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<tbody>
<tr>
<td>Gram positive cocci or rods</td>
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<tr>
<td>Gram negative cocci or rods (in more severe/chronic cases)</td>
</tr>
<tr>
<td>Cells (skin cells, white blood cells and red blood cells)</td>
</tr>
<tr>
<td>Parasites (Demodex spp. and Otodectes cynotis)</td>
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<tr>
<td>Stain debris</td>
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<td>Hair</td>
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Table 1 Cytological findings from otic samples
<table>
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<tr>
<th>Equipment</th>
<th>Description</th>
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<tbody>
<tr>
<td>Otoscope</td>
<td>Suction/syringe</td>
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<tr>
<td>Earwick</td>
<td>Drying product</td>
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<tr>
<td>Cotton wool</td>
<td>Cleaning product</td>
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<tr>
<td>Warm water</td>
<td>Spruel needle</td>
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<tr>
<td>6fg dog urinary catheter</td>
<td>with the fenestrated end cut off</td>
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<td>(for otitis media only)</td>
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<tr>
<td>Crocodile forceps</td>
<td>(to remove polyps and foreign bodies and to place earwicks if necessary)</td>
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Equipment needed for an ear flush under general anaesthetic