- (B) Deep skin scrapings (to a point of capillary bleeding)
  - (C) Skin scrapings should not be performed to evaluate for sarcoptic acariasis
  - (D) Fungal cultures are required for the identification of sarcoptic acariasis
3. In acetate tape preparation staining, which of the following is imperative?

- (A) The fixative (alcohol) is skipped as the adhesive on the tape will dissolve
- (B) The acetate tape be placed in the fixative for at least 2 minutes
- (C) The sample be heat fixed prior to staining
- (D) Acetate tape sample cannot be stained

Ears: what do they really look like?

Michael S. Canfield

What does normal look like in the dog and cat? When the ear needs to be cleaned to evaluate the ear, what techniques are effective?

The external ear is composed of the annular, scutiform and auricular cartilages. The intertragic incisure is where the tip of the otoscope should be placed when beginning an otoscopic examination. Lateral traction is applied to the apex of the pinna to straighten the elastic canal and reduce the luminal fold. The normal ear canal has visible vasculature. The dog's ear canal is about 5–10 cm long and 4–5 mm in diameter. The distal diameter of otoscope cones varies from 4–9 mm which serves as a limiting factor for an appropriate otoscopic examination. This is especially true with an inflamed ear canal, toy breeds and cats.

The tympanic membrane separates the external ear from the middle ear. It is quite common to have the tympanic membrane obscured by ceruminous debris or exudate which prevents a thorough otoscopic examination. The upper portion is called the pars flaccida and the lower portion is called the pars tensa. The normal pars flaccida is loose, slightly opaque with prominent vascularity. The pars tensa is thin and should appear nearly translucent. The ossicular chain is attached to the pars tensa via the malleus, causing the external surface of the pars tensa to have slight concavity. The manubrium of the malleus should typically be visible through the normal pars tensa. This serves as another landmark for the veterinary surgeon when determining normal from abnormal.

The canine middle ear consists of the space within the bulla, the ossicular chain and the Eustachian (auditory) tube orifice. The promontory is located along the dorsomedial wall of the bulla. Within the promontory is the cochlea. The round window is located caudolaterally. The dog has a bulla septum that is often visible through a normal tympanic membrane.

The feline middle ear has a bulla septum dividing the bulla into the dorsolateral and ventromedial compartments. Otherwise, the middle ear is structurally like that of the dog.

ABNORMALITIES

Aural masses such as adenomas and papillomas occur in the canine ear. Canine aural and nasopharyngeal polyps are rare and typically unilateral, while aural and nasopharyngeal polyps are the most common non-neoplastic masses found in the ear canal or nasopharynx of cats. Feline aural and nasopharyngeal polyps often result in otitis externa, otitis media and may result in respiratory signs.

Otitis externa is common in the dog and less common in the cat. Failure of epithelial migration (self-cleaning) may result in ceruminolith formation. Debris situated against the pars tensa may serve as a nidus for infection in addition to causing gradual stretching of the pars tensa. Chronic otitis externa may result in the extension of infection into the middle ear with resulting otitis media.

Otitis media may arise through extension of otitis externa, from within the middle ear or via the auditory tube. The pars tensa will classically appear discoloured or opaque. In addition, the pars tensa is often convex laterally in contrast to its normal lateral concavity. If the auditory tube is patent and the exudate has a low viscosity, the pars tensa may not bulge. Myringotomy, although not difficult to perform, is not without risk. The concern for cholesteatoma formation is a valid one.

KEY LEARNING OBJECTIVES

- Review what equipment options exist for otoscopic evaluation in dogs and cats
- Develop a greater understanding of the external ear canal and the tympanic membrane
- Improve otoscopic skills and identify techniques that can be incorporated into everyday practice

MULTIPLE CHOICE QUESTIONS

1. Why is the intertragic incisure an important landmark?
  - (A) It is where the tip of the otoscope should be placed when beginning an otoscopic examination
  - (B) It is where the tympanic membrane is found
  - (C) It is where the vertical and horizontal canals meet
  - (D) It is the structure in the vertical canal that is commonly struck by the otoscope and induces pain

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2. Why is traction applied to the apex of the ear pinna during otoscopic examination?
  - (A) To direct pinna laterally, straighten the elastic canal and reduce luminal fold interference
  - (B) To cause discomfort and distract the patient
  - (C) To cause the Eustachian (auditory) tube to open

- (D) To prevent the patient from moving away from the otoscope
3. What are the two major parts of the tympanic membrane?
  - (A) Pars tensa and pars flaccida
  - (B) Pars tensa and manubrium
  - (C) The ossicular chain and pars tensa
  - (D) The external acoustic meatus and promontory

Otitis: what really causes it?

Craig E. Griffin

Otitis externa is not a diagnosis but a term that identifies that a dog has inflammation of the external ear. In practice it is one of the most common problems that results in clients bringing their dogs in for veterinary care. It is important to realize that many diseases and problems can cause otitis, but more importantly that the vast majority of cases have a combination of components (causes and factors) that result in the clinical manifestations. Each component has its own way to be diagnosed, treated and prognosed. Making a complete diagnosis of an otitis case requires recognition of each primary and secondary cause as well as perpetuating or predisposing factor that are present.

Causes can induce inflammation in the ear and primary causes are the first factors that start otic inflammation. The most common is atopic disease, making up the majority of cases seen in dogs. Keratinization disorders, endocrinopathies, conformational and neoplastic disorders make up the majority of the remaining cases, though almost any skin disease can affect the ear canal. The diagnosis of the primary cause is most often based on a good history and thorough dermatological examination. When no other skin lesions or pruritus is present the classic atopic otitis case has erythema, usually mild or moderate, mainly of the external orifice, concave pinna or vertical canal. Secondary causes occur in an already inflamed or abnormal ear and most commonly are microbial agents that may cause more inflammation than the primary disease. Clinically these stimulate the exudates and discharges found in the ear and are diagnosed primarily by cytology.

Factors are agents or elements of the disease or pet that contribute to ear disease and are divided into perpetuating and predisposing. Perpetuating factors occur after inflammation in the ear canal leads to anatomical or physiological changes that make the ear harder to treat and prone to secondary causes recurring even when the primary disease has been treated and the infections had been resolved. The most common perpetuating factors are failure of epithelial migration, proliferative changes and obstruction of the ear canal lumen and otitis media.

These are most often diagnosed with otoscopic examination though otitis media may be difficult to detect and can require imaging techniques such as computed tomography (CT) scans or magnetic resonance imaging (MRI) and a cranial nerve neurological examination. Predisposing factors are mostly structural or environmental changes that alter the ear microflora or aggravate a primary cause, such as swimming, congenital stenosis and warm humid environments. These are usually diagnosed with the otoscopic examination and history.

KEY LEARNING OBJECTIVES

- Recognize that the diagnosis of otitis externa is complex, usually involving multiple components
- Learn the common causes (primary and secondary) and factors (perpetuating and predisposing) that occur in otitis externa cases
- Learn key tips to identifying which causes and factors are present

MULTIPLE CHOICE QUESTIONS

1. Which best describe the role of factors in otitis cases?
  - (A) Factors are a disease that initially caused the inflammation
  - (B) Factors are how the ear looks when infected
  - (C) Factors are best identified with cytology examinations
  - (D) Factors contribute to but do not cause otitis directly
2. Which of the following methods is most often used to diagnose secondary causes?
  - (A) Cytology from the ear canal
  - (B) Dermatological examination of the dog
  - (C) Historical information obtained about the development of the ear problem
  - (D) Imaging techniques such as CT scans or MRI
3. Which of the following best describes how swimming contributes to ear disease?
  - (A) It is a primary cause
  - (B) It is a secondary cause
  - (C) It is a predisposing factor
  - (D) It is a perpetuating factor