Consulting room diagnostics in dermatology

Michael S. Canfield

Consulting room diagnostic tests provide key information to the veterinary surgeon, but these diagnostics are often omitted. A clearer understanding of the diagnostics and improved efficiency will allow better use of time and ultimately improve the veterinary surgeon's success in dermatology cases. This presentation contains videos, photomicrographs and clinical photographs demonstrating the most valuable techniques.

SKIN SCRAPING/HAIR PLUCKS

Skin scraping/hair plucks should be performed to identify various ectoparasites such as *Demodex*, *Sarcoptes*, *Notoedres*, *Cheyletiella* and trombiculids.

- Deep (to the point of capillary bleeding) scrapings should be performed in areas with alopecia, comedones, follicular casts and/or erythema. Multiple areas should be sampled
- Superficial scrapings should cover large surface areas, focusing on areas most likely to harbour the suspected organism(s). Ear pinna, elbows, and ventrum for sarcoptic acariasis and along the dorsum for cheyletiellosis
- Hair plucks: if *Demodex* is suspected but the patient is uncomfortable, scraping with a blade or spatula may prove difficult. Hair plucks can be performed. Plucks can diagnose but cannot rule out *Demodex*.

TRICHOGRAM (HAIR SHAFT ANALYSIS)

This is used to visualize the hairs for evidence of self-trauma, growth phase, pigmentary disorders and fungal infection.

CYTOLOGY, ACETATE TAPE PREPARATIONS

Cytological examination can allow one to form a more concise list of differential diagnoses.

- More common methods of specimen collection for cytological examination include direct smear, acetate tape impression, needle aspirate, swab smear, and scraping
- Direct impression smears are the author's preference for cytology sample collection
- Tape preparations (clear packing tape or clear acetate tape) are good for dry lesions, collecting surface debris, hair, *Cheyletiella* and lice. Skip the fixative when staining.

Cytological findings

Melanin and keratohyalin granules are often mistaken for bacteria.

Cytological interpretation

Evaluate the cytological response of the skin.

- Are inflammatory cells present? If so, what types are identifiable?
- Are there eosinophils? If so, consider allergic, parasitic and furunculosis lesions
- Are there neutrophils? If so, do they have degenerative or toxic changes to suggest infection? Is phagocytosis present?
- Are there acantholytic cells? Consider suppurative skin disease, dermatophytosis or pemphigus
- Are there lymphocytes, macrophages and plasma cells (granulomatous inflammation) or lymphocytes, macrophages, plasma cells and neutrophils (pyogranulomatous)? Infectious versus sterile should be considered
- Deep bacterial infection is where a mixed cellular infiltrate with large numbers of histiocytes, macrophages, lymphocytes and plasma cells is seen and fewer bacteria with greater number of intracellular bacteria.

WOOD'S LAMP

Wood's lamp emits ultraviolet light which is passed through a cobalt or nickel filter. The examination must occur in a dark room: 30–80% of *Microsporum canis* strains will fluoresce a yellow–green colour. *Dermatophytes do not form macroconidia in tissue.*

FUNGAL CULTURE

Macroconidia isolation from a dermatophyte test medium (DTM) allows for identification of the dermatophyte type.

KEY LEARNING OBJECTIVES

- Recognize the various consulting room diagnostic tests available
- Develop a clear understanding of how to perform the diagnostic tests efficiently
- Develop an understanding on when and why to perform these diagnostic tests

MULTIPLE CHOICE QUESTIONS

1. Dermatophytosis identification can be confirmed by which of the following?
 - (A) Identification of macroconidia isolated from a DTM
 - (B) Finding macroconidia on a skin cytology sample
 - (C) Red colour change on a DTM without macroconidia identification
 - (D) A negative Wood's lamp examination
2. How should skin scrapings to diagnose sarcoptic acariasis be performed?
 - (A) Multiple superficial scrapings covering a large surface area

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- (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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