Ears 101—it’s not all infection! Let’s start with dogs, first

EAR SMEARS—yeast or bacteria?
If bacteria—cocci or rods.

EAR SMEARS IN OIL—contagious mites such as Cheyletiella, Otodectes OR demodex.

Otitis: To be performed on every patient:

- EAR SMEARS—yeast or bacteria?
- If bacteria—cocci or rods.
- EAR SMEARS IN OIL—contagious mites such as Cheyletiella, Otodectes OR demodex.

Otitis—cytology on every patient!

- You must perform a cytology on every otitis patient or you won’t know if you’re dealing with yeast or bacteria!
- It gives you a head start as to what therapy you’ll need.
Cocci bacteria is usually Staph or Strep which is a normal component of the ear flora unless present in large amounts.

Liquichlor-compounded, Osurnia (FTB), or Claro (not for use in cats) are my choices— If nonresponsive—culture! Other—Baytril Otic, mupirocin

Mupirocin ear drop recipe:
- Heat 1 tube Mupirocin (in the tube) in mug of warm water and allow to dissolve in the tube. Add to 60ml sterile water. 3 mos expiration
- Off label use.

Dose: 10 drops bid in affected ear(s)

Normally present in canine ears in small amounts.
Yeast hypersensitivity
Prefer NOT to use topicals containing gentamicin. No ear flush—keep ears dry.
Miconazole/synotic ear drops, Posatex
Systemic antifungals
Recipe for Miconazole/synotic ear drops:
1.5cc Miconazole lotion in 8cc Synotic and use 2-3 up to 4-5 drops sid or bid depending upon size of the dog. I don’t use Conofite (Clotrimazole) lotion in cats due to the propylene glycol.

Note: off label use, we give it a 6 mos expiration date.

Proteus or Pseudomonas
Culture usually necessary.
Quinolones, aminoglycosides
Caution with gentamicin-deafness
Topicals important
Systemic antibiotics

Before going with an aminoglycoside ear drop, I use a topical quinolone such as Baytril. Some dogs on topical aminoglycosides especially gentamicin may experience temporary deafness.

Recipe: 1.5cc small animal Baytril injectable in 8cc Synotic. Note: this is off label, compounded. We give it a 6 mos expiration date. Dose: 3-4 to 4-5 drops s-bid.
Cipro ear drops recipe: Add 2cc Dexamethasone SP 4mg/ml to 10cc bottle of ciprofloxacin .3% ophth soln (remove 2cc first) to make a total volume of 10cc. 3 month expiration. This is off label use.

Amikacin ear drops recipe: 1cc Amikacin 250mg/ml injection + 12cc Dex SP in 47cc normal saline. 3 month expiration-off label

Other thoughts on otitis...
If long-standing yeast & bacterial otitis-most likely started out as yeast otitis. Ear canal's ability to fight off infection due to chronic yeast otitis encourages secondary bacterial otitis. Check cytology-if rods + yeast present-treat rods lst, recheck, then if rods gone, address the yeast otitis. Try and catch yeast otitis early! ALWAYS DO CYTOLOGY-don't rush to culture-believe what YOU see on cytology!

Otitis externa-always consider contact allergy to topical ear meds
- Check ear smears
- Inquire about what products are being used and where-applied & how often i.e. pinna vs canal application.
- Check ear canal
- Stop all topicals, short term oral steroid.
Topical steroids cause a thinning of the skin resulting in a fine “peeling” of the medial aspect of the pinna.
Solution—stop the steroid-containing topical! Owners will try and use MORE to remedy the problem.

Topical steroid sensitivity

Ectoparasites-can affect ears & skin-check ear smears in oil
Ears 101-parasitic

- **Otodectes cynotis**
  - Can live ON the dog or cat, outside of the ear.
  - Usually secondary yeast present.
  - Ear smears in oil or observation in canal.

**Otodectes cynotis (ear mites)**

- Life cycle – 3 wks
- Mites feeding cause irritation-ear canal fills with blood, exudate, cerumen.
- # of mites not proportional to amount of discharge.
- Diagnosis by visual otoscope or smears in oil.
Otodectes cynotis (ear mites)

- Live in ears but also neck, rump, tail.
- Local rx's: Acarexx, Tresaderm, Milbemite. Clean ears first.
- Systemic: Selamectin, Ivermectin, Advantage Multi
- Treat household in kennel environments.

Cheyletiella- “Walking dandruff”

- Affects dogs, cats, rabbits, guinea pigs, humans, and ?
- Physical appearance-large
- Mostly surface living (non burrowing)--prefer the dorsum-can affect ears/eyes/nose
- Life cycle-21 days
- 3 species: C. yasguri: usually affects dogs  
  C. blakei: usually affects cats  
  C. parasitovorax: usually affects rabbits
- All of the above can transiently affect humans.

Cheyletiella

- Clinical appearance-DOGS
  Flaky, papular, waxy otitis, itchy/swollen face, sneezing, “hookworm infection”-Cheyletiella larvae look like hookworm eggs.
- Some patients asymptomatic i.e. can have asymptomatic carriers
Almost an epidemic!

**Clinical appearance-CATS**

- Miliary dermatitis, EGC lesions, flaky skin, sneezing, nasal congestion, facial pruritus, Depo-Medrol responsive.
- Asymptomatic carriers.
- Can find on ear smears or on combings from the pet.

Cheyletiella

- Mite is large!
- Mite egg resembles hookworm egg but larger.
More Cheyletiella views

Cheyletiella eggs/larvae-resemble hookworm eggs

Cheyletiella
- Treatment - DOGS
  - Ivermectin - 200ug/kg/wk x 4 doses - not in herding breeds, caution in elderly dogs no matter which breed.
  - Interceptor 1mg/kg qod x 16 days
  - Revolution - 3 doses, 15 days apart.
  - Must be heartworm negative lst
Cheyletiella

Treatments-DOGS, continued
- Advantage Multi q 2 wks x 4 treatments
- Lime dip q wk x 4-5 weeks
- Frontline spray q 3 wks x 2 applications
- Pyrethrin shampoo q wk x 4-5 wks
- Bravecto, NexGard, Simparica
- Treat the household especially carpet/upholstery with a topical parasiticide eg. Knockout Premise Spray.

Cheyletiella

Treatment-CATS
- Ivermectin 200ug/kg/wk x 4 wks
- Revolution-3 doses, 15 days apart
- Lime dips q wk x 4-5 weeks
- Frontline spray q 3 wks x 2
- Interceptor lmg/lb q wk x 4 wks
- Remember to treat the environment!
Clinical signs: PRURITUS, usually nonresponsive to antiitch steroid doses. Elbows, hocks, ear edges, abdomen. Lymphadenopathy. Early scabies presents just as pruritus with no lesions. Success rate of finding a mite on scrapings: 20-50%. Ear hematoma? Check for scabies, otitis.
Canine scabies: Diagnosis

- Deep skin scrapings till blood- yields mite, eggs, or fecal matter-scrape nonexcoriated areas such as intact yellow crusts.
- Skin biopsy.
- Positive pinnal/pedal reflex.
- House dust mite positive on skin test.
- Elisa test in Europe.
- "Ivermectin response test".

Canine scabies: Treatment

- Bathing to remove crusts, antibiotics for secondary infection, steroids at anti-inflammatory doses.
- Lime sulfur dips q 5-7 days. OR
- Mitaban dips weekly x 2 wks, if >16wks old. OR
- Doramectin 0.6mg/kg weekly injection successful by week 7 in 95% of dogs. OR

- Interceptor: 1mg/kg qod x 16 days, 1st must be heartworm negative. OR
- Revolution: 1 tube topically q 15 days x 2 doses then q month. Heartworm neg. 1st. OR
- Ivermectin: 200ug/kg/wk SQ or PO x 4 wks, heartworm neg. 1st. Do not use in herding breeds, careful in elderly patients Bravecto, Nexgard, Suralaner
Canine scabies: Treatment
- Treat all dogs that were exposed to the patient.
- Treat environment with pesticide, vacuum floors & upholstery, wash bedding. Mite can live off the host from 4-21 days.
- Hypothyroid dogs tend to have massive numbers of the mite.
- Consider in an older dog that never had skin problems before!
- IF YOU EVEN SUSPECT SCABIES, TREAT FOR IT!
- Can the mite live on humans? Possibly for only a few days at most since it's an unpreferred host!

Notoedres-feline scabies

Notoedres (feline scabies)
- Regional seen only in certain areas.
- Crusting of face/ears/hocks
- Skin scrapings
- Easier to find than canine scabies
- Treatment as for Cheyletiella mites
Noncontagious Mites

They're not contagious but still cause a lot of trouble!

Can be localized only to the ears particularly in "steroid-sensitive" dogs such as Doxies, Pugs that have been on chronic steroids or steroid-containing topicals.

Treatment: Milbemite, Bravecto?
Demodex otitis-cats

Appearance: long/slim like Demodex canis.
Localized: usually affects head/ neck or presents as a waxy otitis.
Variably pruritic, patchy, crusty, alopecia.
May be self-limiting
Treatment: lime sulfur, amitraz in mineral oil lcc in 29cc mineral oil--prepare fresh daily.

Demodex cati

Appearance: long/slim like Demodex canis.
Localized: usually affects head/ neck or presents as a waxy otitis.
Variably pruritic, patchy, crusty, alopecia.
May be self-limiting
Treatment: lime sulfur, amitraz in mineral oil lcc in 29cc mineral oil--prepare fresh daily.
**Demodex cati**
- When ears only affected--may present as a waxy otitis—be sure to check ear smears in oil even if very little discharge.
- May be contagious.
- Diluted lime dip 1-2 drops in affected ear sid or 2-3x/wk.
- Avoid steroid use.
- +/- underlying disease.

**Ear Cleaners**
- Don’t over use! Destroys normal ability of the ear to fight off infection.
- Use sparingly in yeast otitis—want a dry ear, not chronically moist!
- Contact reactions common.
- Use especially in rod bacterial otitis, pus-containing ears to remove debris/pus to instill medication.
- Never put cold meds in ears!

**Stenotic canals**
- Find underlying reason: food allergy, atopy, yeast hypersensitivity
- Oral prednisone—short course
- Topical steroid—Synotic
- Surgery—calcified cartilage
Cocker Spaniels’ hyperplastic ears

- Reaction of glands lining the ear canal to chronic inflammation/infection.
- Most often surgical.
- One study (Hall) using Atopica claimed reversal of hyperplasia.
- Topical steroids - Synotic, injectable steroids into the hyperplastic tissue.
- If atopy present, Apoquel little help with ears may make worse?
- Food allergy.
- Keep canal open.

Ear edge vasculitis

- Seen in Chihuahua’s, Doxie’s, Poodles
- Sometimes vaccine related
- Can become systemic
- Steroids, Vit E 20iu/kg sid orally, pentoxifylline 25mg/kg tid, doxycycline 2.5mg/kg bid, cold avoidance

Ear edge vasculitis

- Steroids, Vit E 20iu/kg sid orally, pentoxifylline 25mg/kg tid, doxycycline 2.5mg/kg bid, cold avoidance
Cat’s ears-how they differ
- Middle ear - cat has a much different ventral tympanic bulla.
- Ventral bulla is divided by an incomplete septum - branch of sympathetic nerve runs thru this - damage results in Horner’s syndrome.
- Septum is more readily damaged when flushing, cleaning, or by instruments — Horner’s more common in cats with otitis!
- Fluid in cats’ ears stays there! If irritating-causes damage.

Other thoughts on cat otitis, con’t
- Often see outbreaks of otitis in cats post upper respiratory infection. Presumed to be secondary to Herpes virus.
- Rx: Famcyclovir 125mg bid for 2-4 wks
- Some cats “blow out” their eardrums from violent sneezing — put ear mite rx in - develop otitis media from the rx or ivm! Will see neutrophils and few cocci on smears. Rx-oral antibiotics, no further ear meds!

Cat’s ears-how they differ
- Incidence of ear disease in cat 2-6%
- Allergy doesn’t affect cats’ ears as much as in dogs.
- Coag. neg Staph most often cultured - Pseudomonas not very common.
- Malassezia - more common.
Malassezia otitis in cats

- Can be primary or secondary to underlying atopy.
- I see atopy a lot in orange colored cats—includes calicos and tortoise-shell.
- Can be spread to chin and face by their pawing their face.

Malassezia otitis in cats

- Oral Ketoconazole 200mg 1/8th tablet sid or qod—watch for anorexia.
- Rarely do I use "wipes"—irritation.
- Miconazole Lotion 1.5cc in 8cc Synotic and use 1-2 drops once daily.
- No clotrimazole.

Malassezia otitis-cats

- Can see a primary yeast hypersensitivity.
- Possible ear hematomas due to yeast hypersensitivity.
- Check ear smears, chin/face smears.
Cat’s ears-diseases

- Demodex
- Inflammatory polyps
- Proliferating necrotizing otitis
- Ceruminous cystomatosis

Feline cystomatosis

- Usually due to underlying allergy.
- Surgical removal via laser or topical steroids such as Synotic.

Treating cat’s ears-how they differ

- Avoid ear flushing! Be very gentle!
- Systemic treatment for otitis vs. topicals
- Cats more sensitive to topicals.
- Young cats with recurrent otitis-suspect polyps
- Yeast otitis-oral ketoconazole, Tresaderm or miconazole/synotic
- Try and avoid topical gentamicin-deafness
- Instruct owners on how to medicate with topicals.
- Warm ear meds to room temp.

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- Instruct owners on how to medicate with topicals.
- Warm ear meds to room temp.
Do ear smears in all patients both dry and in oil.
Culture if rods present or if not responding to current meds.
Keep ears dry with yeast otitis.
Ear cleaning in bacterial otitis.

Ear flushes with high pH-Triz ultra—can be irritating.
Contact reaction to ear cleaners.
Not all otitis requires ear flushing!!
No ear flush in cats!
Recurrent otitis in cats- consider polyps.

Thanks for the great work you all do!!

Now everyone go home and hug your pets!!
Daisy and Zoey  Cindy

Because they’re the best thing that ever happens to us in life!