Diseases of the pinnae

Ekaterina S. Mendoza-Kuznetsova

All diseases of the pinna

Only or primarily pinna

- Necrotizing proliferative otitis
- Auricular chondritis
- Proliferative thrombovascular necrosis
- Ear margin seborrhea
- Melanoderma & alopecia of Yorkies
- Solar keratosis and SCC

Pinna is a part of disease

- Scabies
- Feline notoedric mange
- Canine demodicosis
- Dermatophytosis
- Pattern-alopecia
- Leishmaniosis
- Allergy

Necrotizing proliferative otitis (NPO)

- Rare disease of cats
- Few publications
- The cause is unknown
  - Immune-mediated disease
- Kittens and young adult cats
- Adherent necrotic crust on concave pinnae.

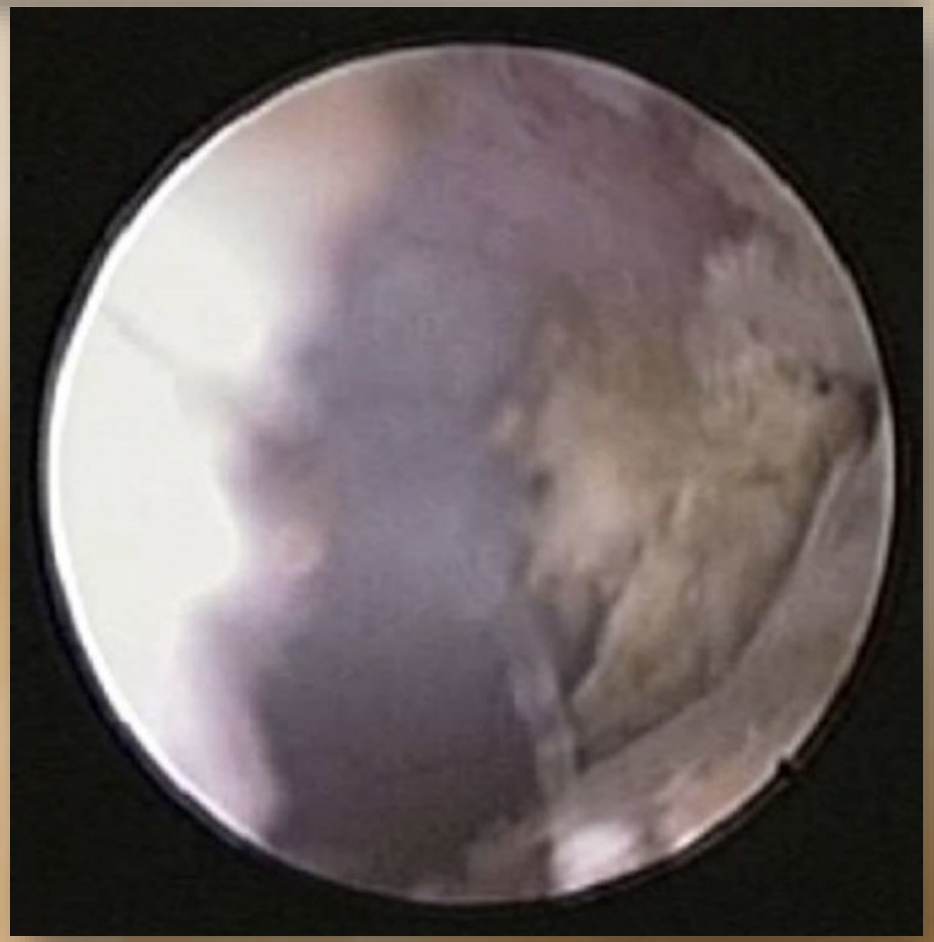
Proliferative and necrotising otitis externa in a cat without pinnal involvement: video-otoscopic features

Stefano Borio[1], Federico Massari[2], Francesca Abramo[3] and Silvia Colombo[1]

Journal of Feline Medicine and Surgery
15(4) 353–356

DOI: 10.1177/1098612X12468838
jfms.com
SAGE

- 2 y.o. DSH male cat
- Chronic signs of otitis
- No response to topical trmt and selamectin
- Bilateral otitis externa and otitis media
- No lesions on the pinnae
- Biopsy confirmed NPO.

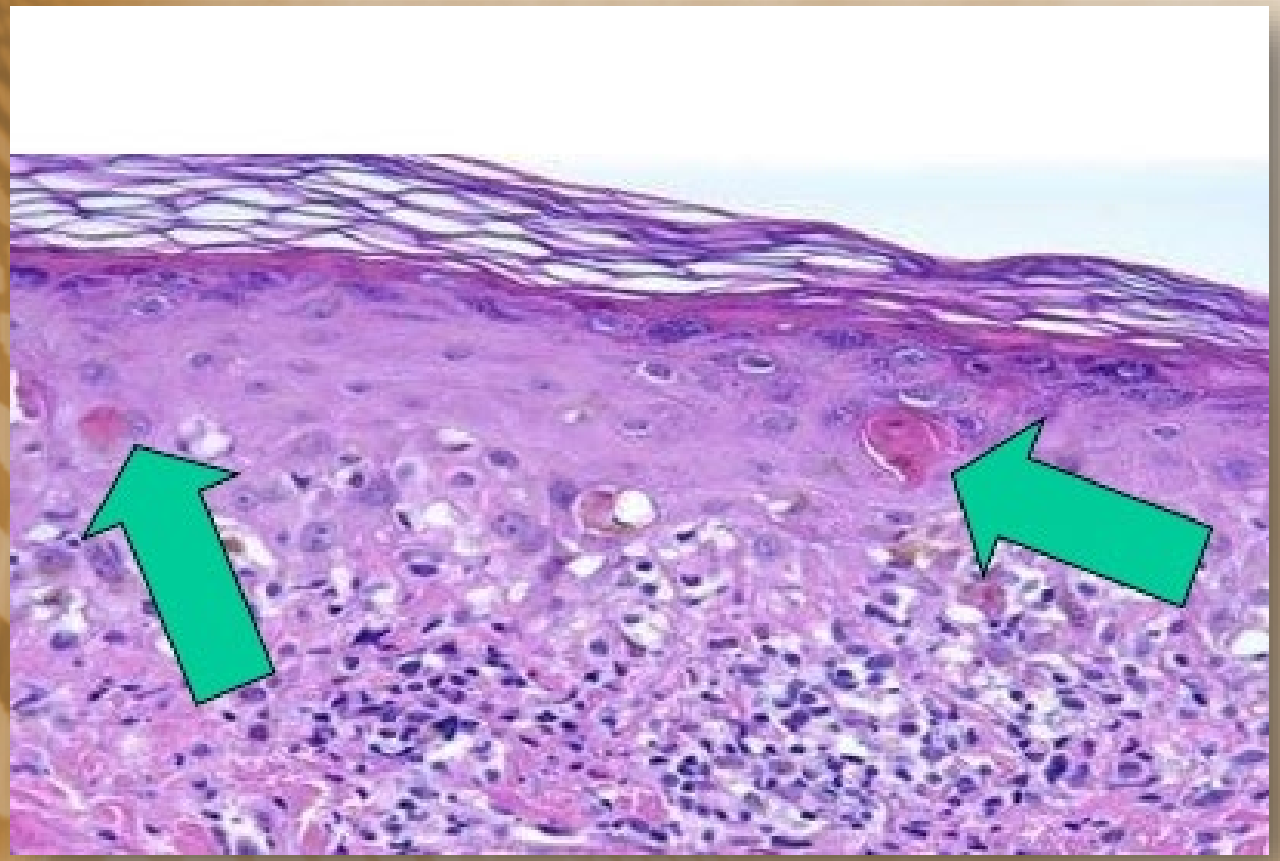


Histopathology

- Epidermal hyperplasia (acanthosis)
- Hyperplasia of the follicular infundibula wall
- Parakeratosis
- Dyskeratotic or apoptotic keratinocytes.

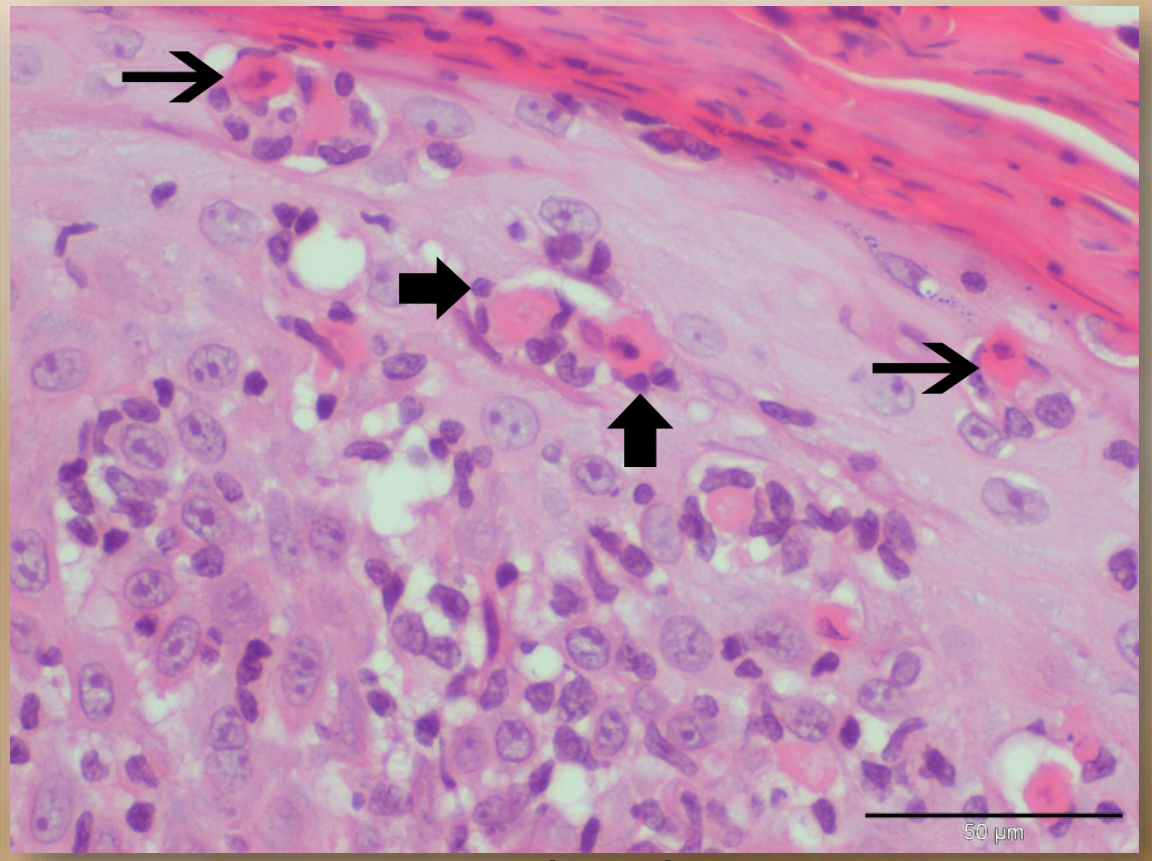
Pathogenesis of NPO

- Dyskeratosis?



www.slideshare.net

- Or apoptosis?

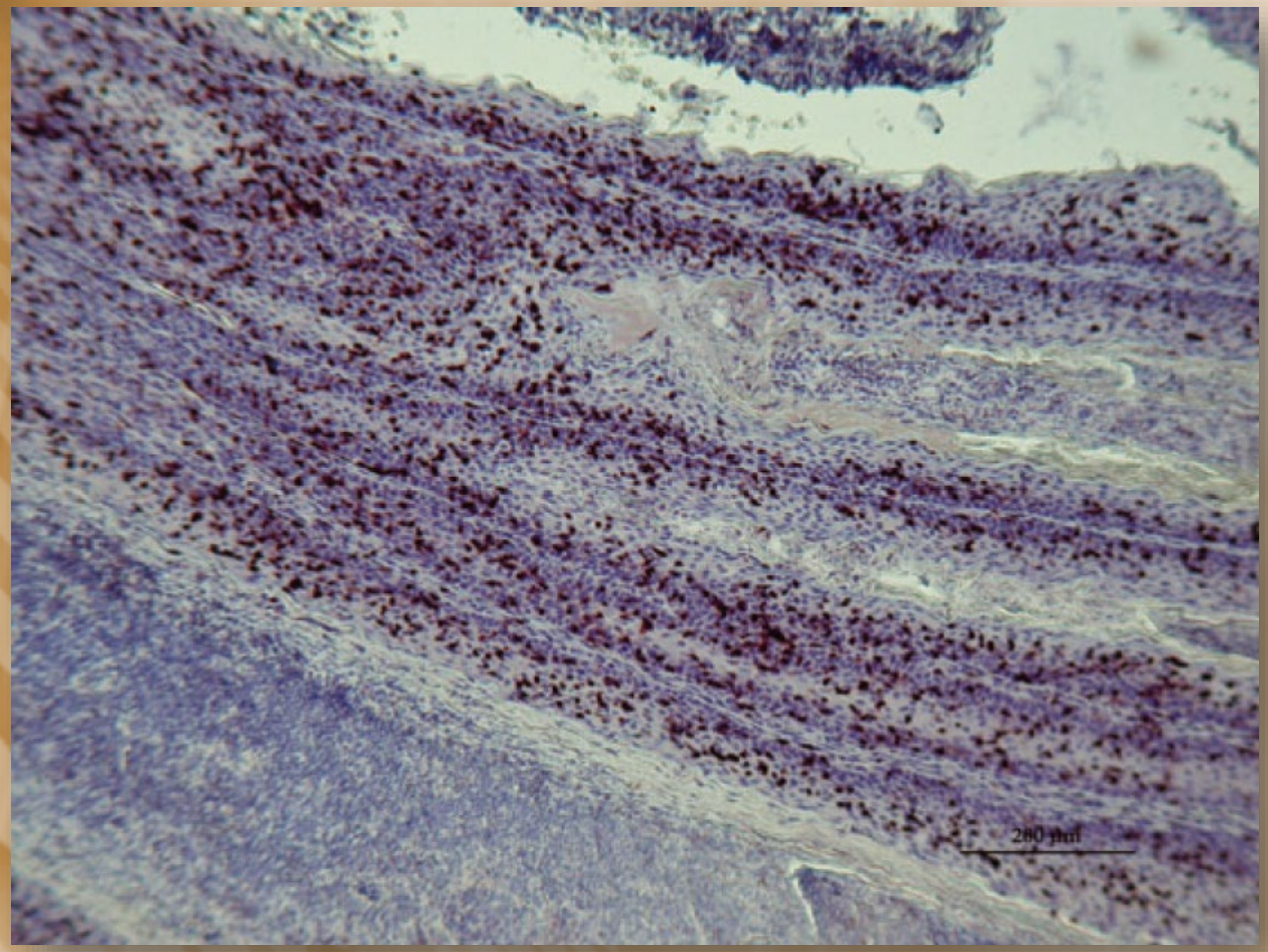


www.cytopath.co.uk

Proliferative and necrotising otitis in a kitten: first demonstration of T-cell-mediated apoptosis

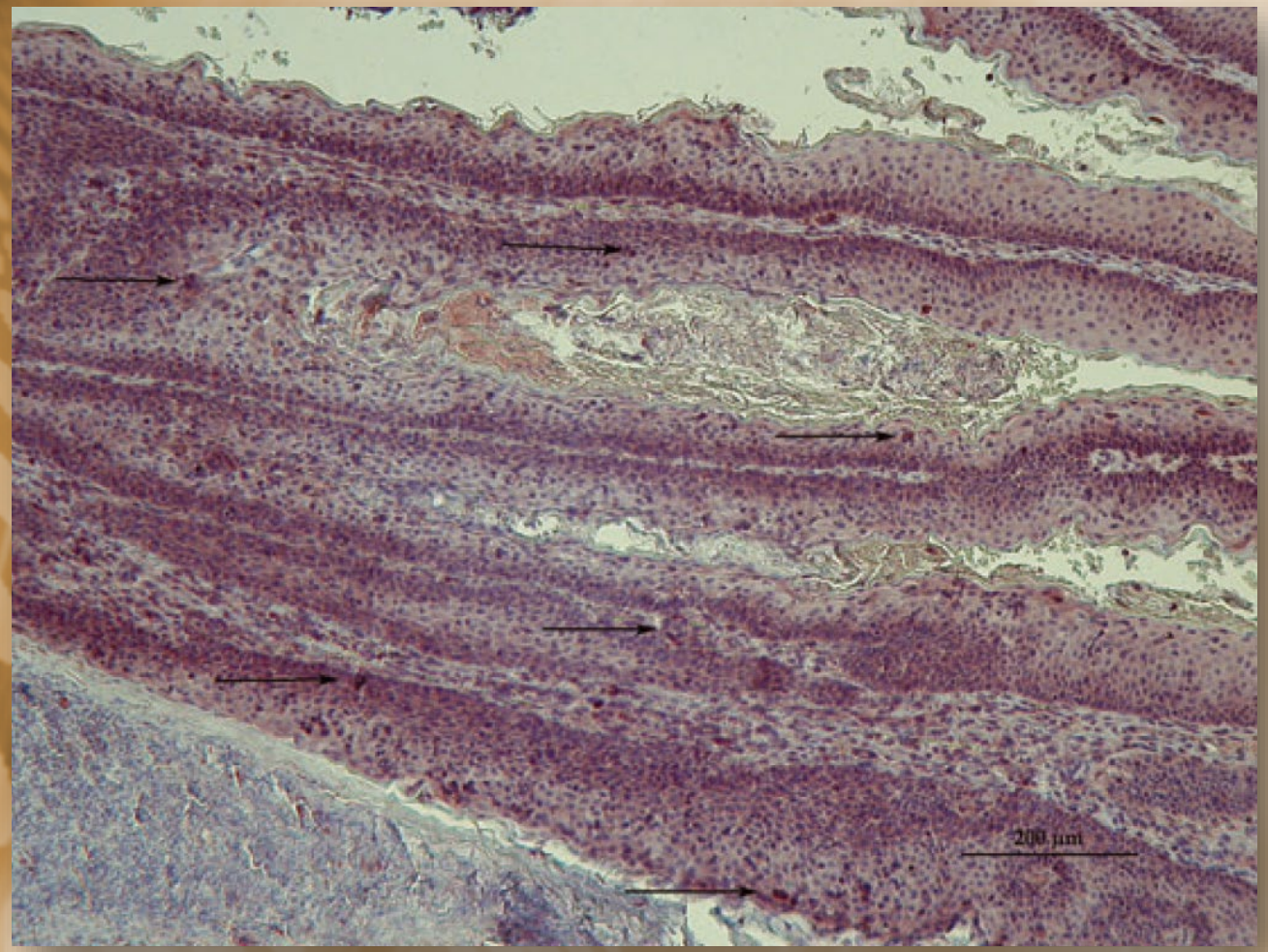
E. Vidémont and D. Pin

Journal of Small Animal Practice (2010)
51, 599–603



- CD3+ cells (T-lymphocytes) in the hyperplastic epidermis.

Proliferative and necrotising otitis in a kitten: first demonstration of T-cell-mediated apoptosis



E. Vidémont and D. Pin

Journal of Small Animal Practice (2010) **51**, 599–603

- Activated caspase-3 in the keratinocytes.

Pathogenesis of NPO

- T-cell mediated apoptosis of keratinocytes
  - Proliferation can be secondary
  - What could be the trigger?
    - Viral infection?
- No herpesvirus, calicivirus or papillomavirus were found in the affected tissue
- Viral infection still could be a trigger without actual virus replication in the tissue.

Treatment of NPO

- Some cases resolve spontaneously
- Some cases respond to tacrolimus
  - Tacrolimus inhibits lymphocyte activation and proliferation
- One case report about successful treatment with local steroid
- Some cases do not respond to treatment or relapse.

Auricular chondritis

- Rare disease in cats
  - Extremely rare in other animals
- Few publications
- The cause is unknown
  - Immune-mediated disease
- Similar to human disease
  - Infiltration with macrophages, T-lymphocytes, B-lymphocytes and neutrophils (Wilson et al., Acta Vet Hung 2019).

Human relapsing polychondritis

- Prevalence is ~4.5 cases/million
- Genetic predisposition is possible
- Etiopathogenesis is unknown – connective tissue immune-mediated disease
- Triggering factors: chemical, toxic, infectious agents or direct trauma
- Autoantibodies (IgG) against collagen type II, IX, and XI ± local T-cell mediated inflammation
- Auricular involvement in 90% of cases
- Ocular inflammation – in 20%-60% cases
- Nasal chondritis, arthritis, respiratory tract and cardiac involvement…

Human relapsing polychondritis

Author	Criteria
Mc Adam et al.	Recurrent chondritis of both auricles
	Nonerosive inflammatory polyarthritis
	Chondritis of nasal cartilages
	Inflammation of ocular structures
	conjunctivitis/keratitis/scleritis/uveitis
	Chondritis of respiratory tract
	laryngeal/tracheal cartilages
	Cochlear and/or vestibular damage
	neurosensory hearing loss/tinnitus/vertigo
McAdam et al. (5)	Requires 3 of 6 criteria to diagnose

Hakan Emmungil, Sibel Zehra Aydın

Auricular chondritis in animals

- Pinnae:
  - Erythema
  - Thickening
  - Distortion
  - Alopecia
  - Pain
- Ocular changes:
  - Corneal vascularization and opacification
  - Conjunctivitis, entropion

Auricular chondritis in animals

- Other joints:
  - Lameness
  - Thicknesses of the joints
  - Degenerative changes of stifle
- Other organs:
  - Heart murmur
  - Cardiomegaly
  - Gingivitis
- Other signs:
  - Fever, anorexia

Autoantibodies have never been shown in animals with auricular chondritis

Auricular Chondritis Associated with Systemic Joint and Cartilage Inflammation in a Cat

Tomoshige BABA[1)], Atsushi SHIMIZU[2)], Tamio OHMURO[3)], Naohiro UCHIDA[1)], Kumiko SHIBATA[4)], Masahiko NAGATA[4)] and Kinji SHIROTA[1)]*

J. Vet. Med. Sci. 71(1): 79–82, 2009

- Gait abnormalities
- Uveitis
- Alopecia, swelling, distortion and erythema on the pinnae
- Deformation of the carpal and tarsal joints
- Deterioration of the general condition
- Death.

- FIV & FIP negative, FeLV positive
- Multiple cartilages affected
- Lysis of knee meniscus
- Swelling and hemorrhages in lymph nodes
- Liver lesions
- Spleen and lymph nodes nodules – B-cell lymphoma.

Auricular chondritis – diagnosis

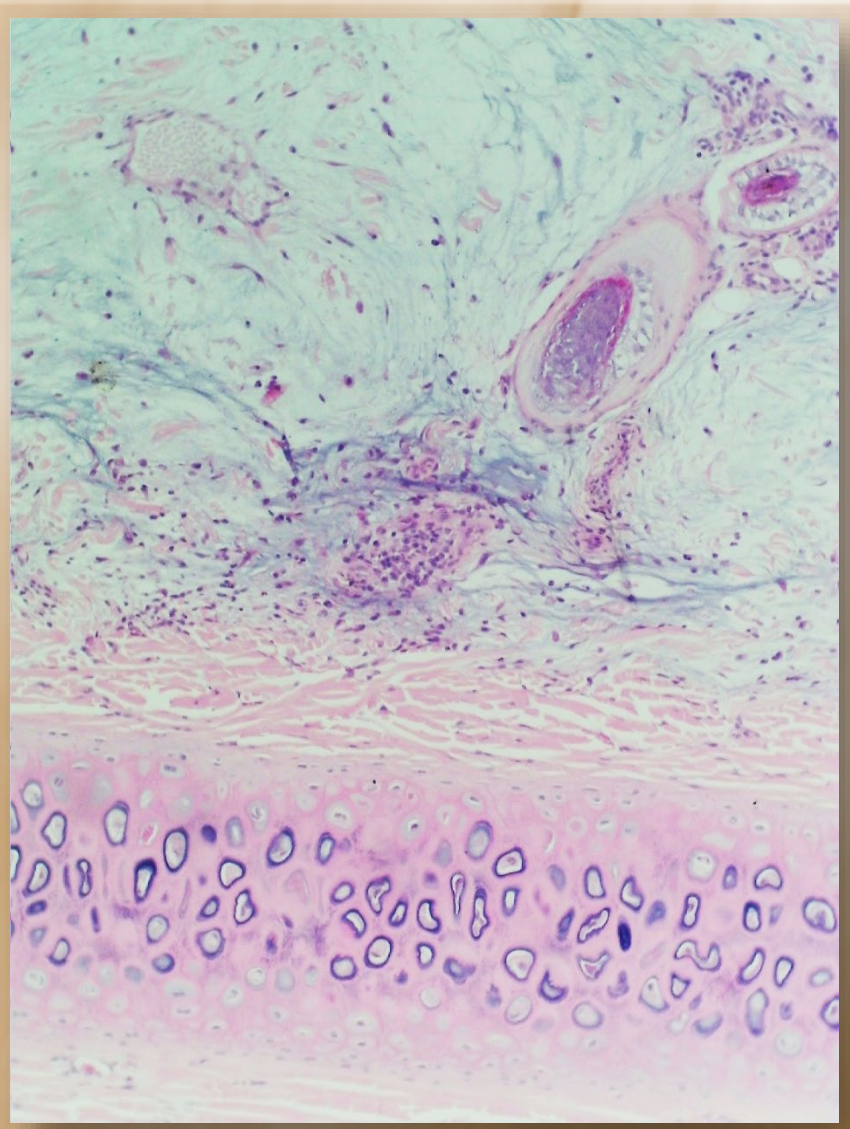
- Clinical signs
- Biopsy of the affected cartilage
- ± criteria

Patrick, Chinese Crested dog, 5 y.o.

- Recurrent focal swelling, mild pain and erythema on the pinnae
- No other clinical signs
- Responds to steroids.

Patrick, histopathology

- Description:
  - The dermis has a focal mucinous degeneration of the dermis with a perivascular plasma cell reaction. The cartilage is normal.
- Diagnosis:
  - Mucinous dermatitis.



Auricular chondritis – treatment

Humans

- Steroids are usually effective
- Dapsone
- Cyclosporine
- NSAID

Animals

- Spontaneous resolution is possible
- Steroids – commonly are not effective
  - Prednisolone 2-5 mg/kg/day
- Dapsone
  - 1 mg/kg/day
- Cyclosporine ?

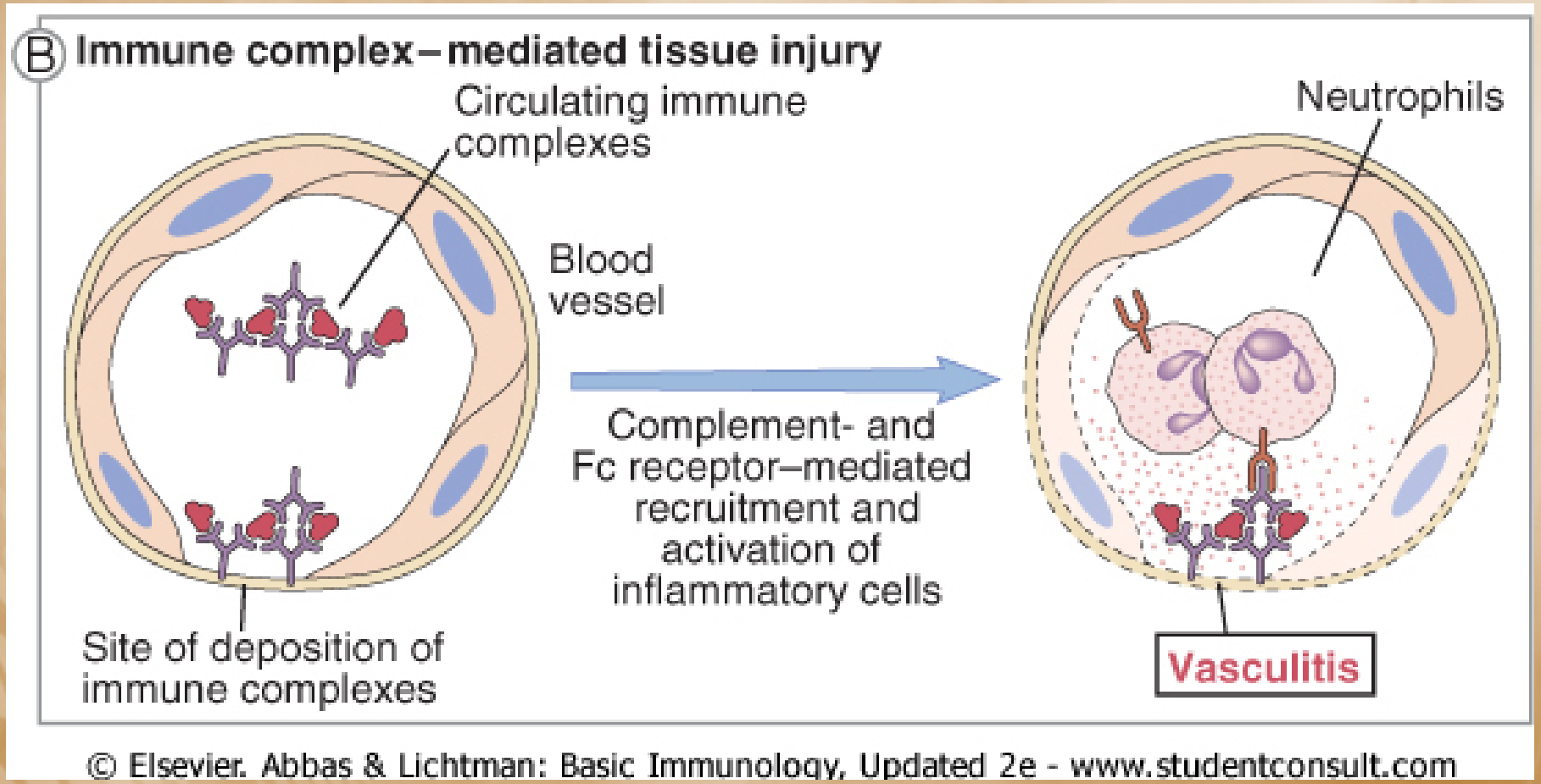
Auricular chondrosis in a horse

- Nodular lesions on the pinnae
- No other cartilage affected
- Histo:
  - No signs of inflammation
  - Lysis and degenerative changes in the cartilage
- No response to prednisolone 200 mg a day for 50 days
- No cause was found
- Authors' conclusion:
  - Auricular chondrosis rather than chondritis.

Proliferative thrombovascular necrosis of the pinna (PTNP)

- Not a rare disease in dog, uncommon in cats
- Vasculopathy

Vasculopathy



Vasculopathy

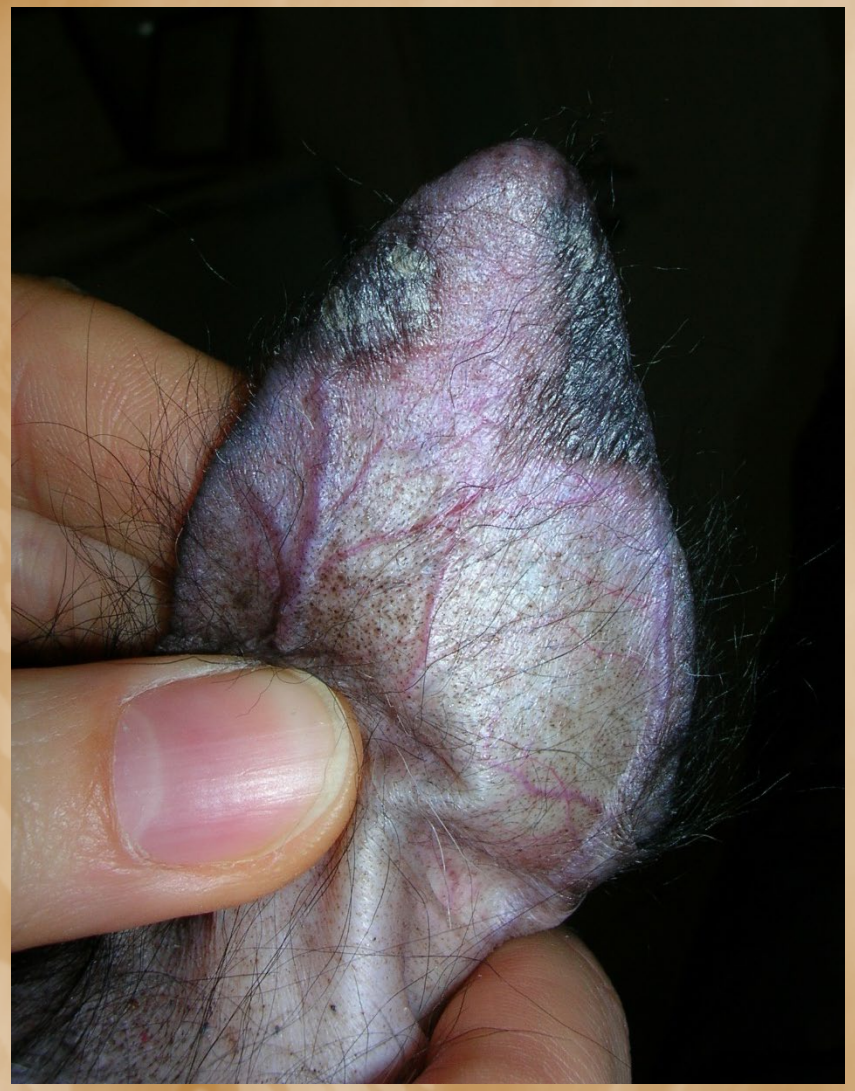
Causes of vasculitis

- (Chronic) infections
- Allergy – particular food allergy
- Drug reactions
- Neoplasia
- Autoimmune diseases
- Genetic predisposition
- Idiopathic.

Causes of PTNP

- One case of fenbendazole drug reaction (Nuttall *et al*., JSAP 2005)
- One case of *Batonella*-caused ear tip vasculitis in a dog (Southern *et al*., Vet Derm 2018).

PTNP – clinical signs



- Early sings: swelling, erythema, discoloration.

PTNP – clinical signs

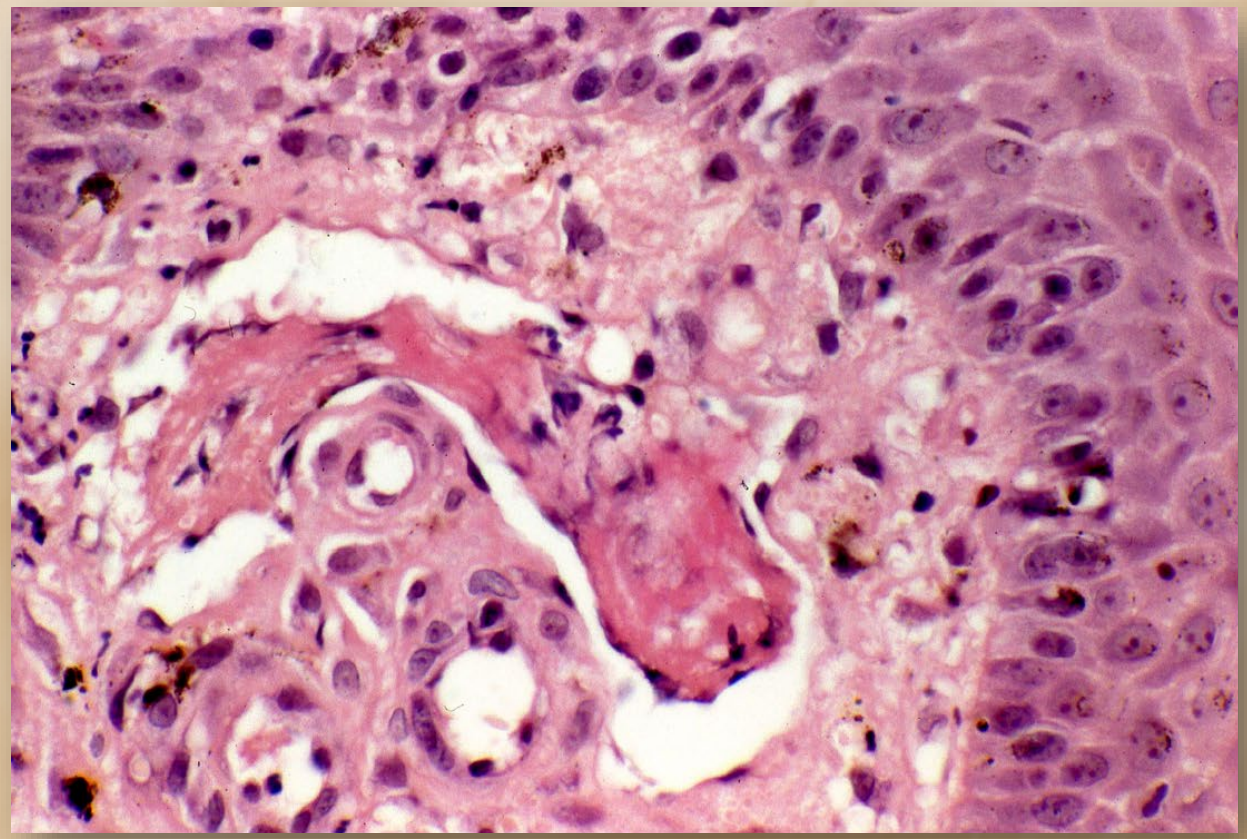
- Early sings: swelling, erythema, discoloration
- Later: crust, ulcers, pain, bleeding
  - "Bleeding from the healthy head skin".

PTNP – clinical signs

- Early sings: swelling, erythema, discoloration
- Later: crust, ulcers, pain, bleeding
- Can progress to necrosis and even loss of part of the ear
- Other skin signs and systemic signs are usually absent.

PTNP – diagnostic tests

- Clinical presentation is very characteristic
- Rule out all the possible causes:
  - Infections
  - Allergies
  - Drug reactions
- Histopathology
  - Performing biopsy is complicated.



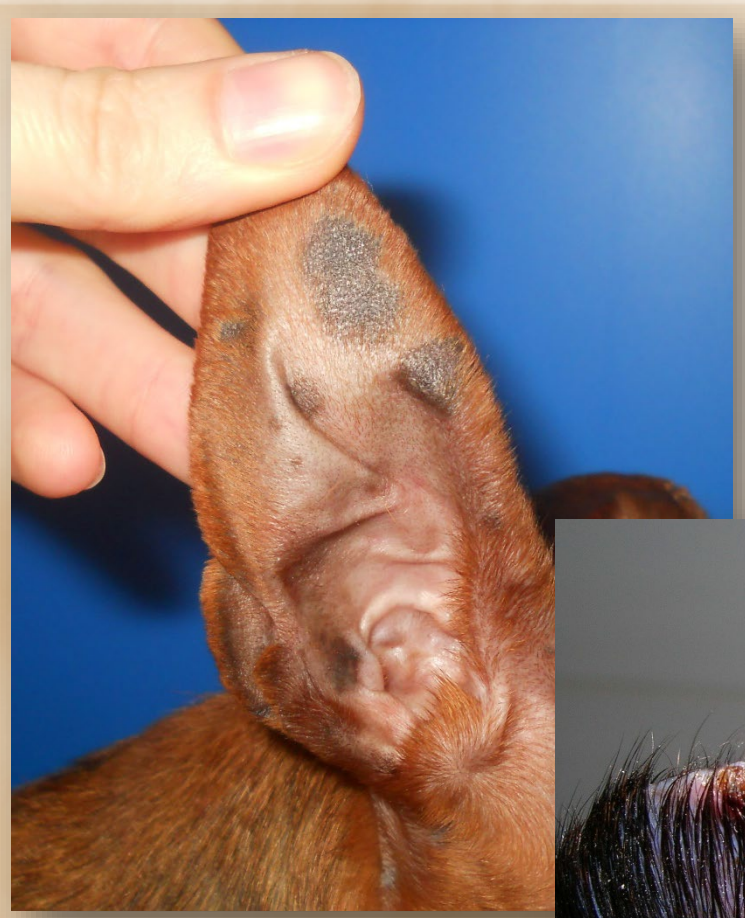
Berrocal, 2000

PTNP – treatment

- Pentoxifylline (10-25 mg/kg BID or TID)
- Topical steroids
- Tacrolimus
- Systemic steroids
- Doxycycline (5-10 mg/kg SID or BID) or Tetracycline (250-500 mg TID) with Nicotinic acid (250-500 mg TID)
- Surgical removal.

PTNP – how to choose the treatment?

- Based on the aetiology?
  - Usually is unknown
- Based on histopathology?
  - Difficulty with preforming biopsy
  - Depends on stage rather than on etiology
- Based on the stage and clinical presentation?



PTNP – treatment choice based on the clinical course

Mild-to-moderate

- Acute – topical/systemic short course of steroids ± tacrolimus? Pentoxifylline?
- Chronic – is the treatment needed at all? Tacrolimus? Pentoxifylline? Doxy(tetracycline)+nicotinic acid(?)

Severe

- Acute – systemic/topical steroids ± pentoxifylline
- Chronic – cyclosporine(?), doxy(tetracycline)+nicotinic acid(?), systemic steroids, ± tacrolimus ± pentoxifylline or surgery

End-stage, no inflammation

- No treatment
- Pentoxifylline to prevent relapses?
- Surgery for cosmetic reason.

Treatment of vasculopathies

- Success depends on the stage
- Difficult to access the treatment result:
  - Delay from the actual inflammation to the clinical signs of ischemia
  - Established ischemic lesions may not response to any treatment
- Possible criteria of success:
  - No further exacerbation of existing lesions
  - No new lesions development
  - Healing of existing lesions
  - No relapse (if there have been before).

Ear margin seborrhea

- Cosmetic disorder
- Excessive scales on the ear margin only
- Dachshunds and other floppy pinnae breeds are predisposed
- Hyperfunction of sebaceous glands or/and increased epidermal turnover
- The cause is unknown.

Clinical signs

- Scaling on the ear margin
- Follicular casts
- No lesions on the other parts of pinnae
- No similar lesions on the other parts of the body
- Can be secondary pyoderma
- Usually doesn’t bother the dog unless the pyoderma is present.

Ear margin seborrhea – differentials

- Demodicosis
  - Follicular casts are common in long haired breeds
  - Usually not only margins are affected
  - Usually there are lesions on other parts of the body (toes!)
  - Look for comedones
  - Secondary pyoderma is more common than in seborrhea
  - Trichogram is possibly better than scraping in long haired breeds.

Ear margin seborrhea – differentials

- Canine scabies
  - More crust than scales/follicular casts
  - Usually is very pruritic
  - Not only margins are affected
  - Not only pinnae are affected (elbows and hocks!)
  - Doesn't stay stable for months or years – develops further
  - Mites are difficult to find in skin scrapings! ~ 50% cases.

Ear margin seborrhea – differentials

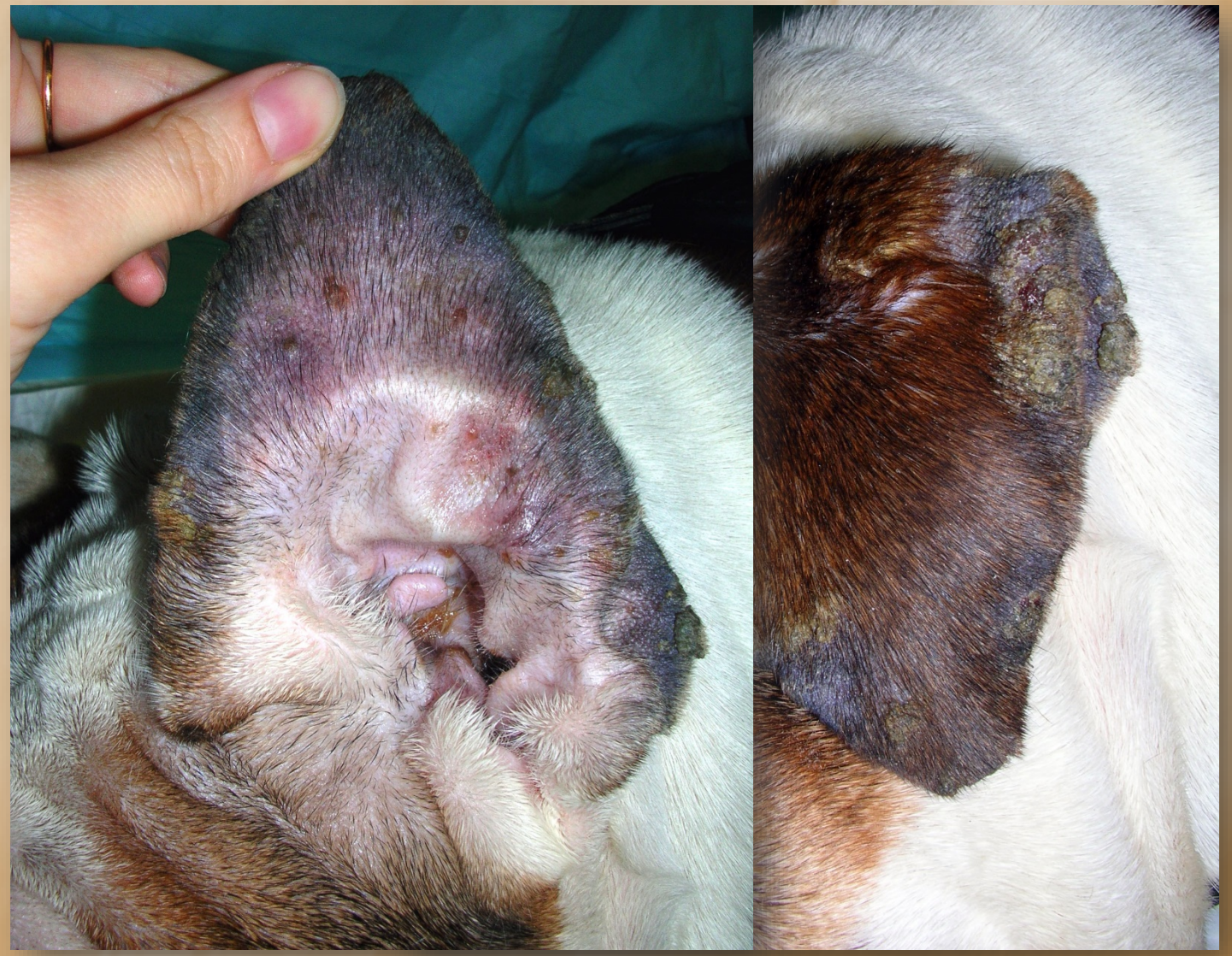
- Dermatophytosis
  - Classical sign – spontaneous focal alopecia – may not be present in long haired breeds
  - May affect only pinnae margin, but it is not often
  - Doesn't stay stable for months or years – develops further or resolves
  - Can be difficult to diagnose:
    - Wood's lamp
    - Trichogram, skin scrapings
    - Dermatoscopy
    - Fungal culture…

Ear margin seborrhea – differentials

- Sebaceous adenitis
  - Very similar lesions – scales and follicular casts, not always akitas!
  - Usually affects both sides and not only margins
  - More often starts with the head and back
  - Other parts of the body are usually affected
  - Slowly progressive disorder
  - Biopsy is necessary for confirmation.

Ear margin seborrhea – differentials

- Pemphigus foliaceus
  - Mostly crust, not scales
  - Usually pustules can be found
  - Commonly affects other parts of the body:
    - Dogs – footpads, nasal planum
    - Cats – claw folds
  - Cytology – acantholytic cells
  - Biopsy is important for confirmation.



Melanoderma and alopecia of Yorkshire Terriers

Solar keratosis (SK) and squamous cell carcinoma (SCC)

- White cats or cats with white pinnae
  - About 13 times more often than others
- Overage age is about 11 years
- UV-induced mutations may lead to SK and later – to SCC development
- SCC is locally invasive, slowly metastasizing
- Biopsy is important for diagnosing
- Treatment – surgery, phototherapy…