

Uveitis in *Bartonella*-infected cats: a case series



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Case Series



- Sept 2010 – Dec 2011
- 6 cats (5 castrated males, 1 spayed female)
 - 4 Domestic Shorthairs, 1 Russian Blue, 1 Maine Coon
 - Age range: 4 – 17 years (average 8.6 y)
- Diagnosed with uveitis, tested 4+ on *Bartonella* WB





Feline Bartonellosis



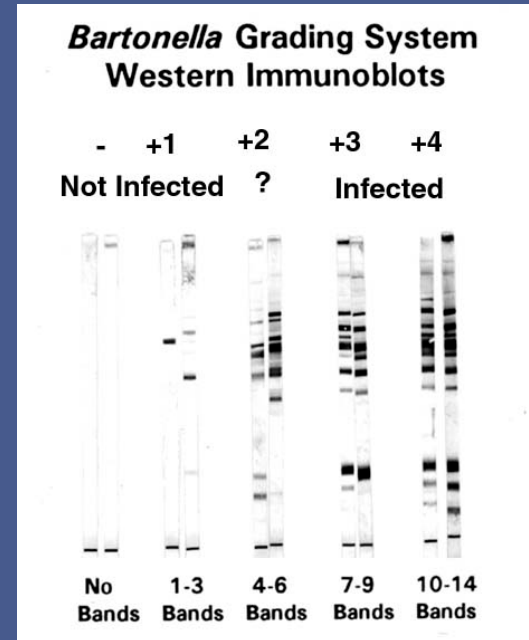
- Gram negative bacteria
- Vector transmitted (flea excrement)
- Cats are the reservoir for *Bartonella henselae*
 - Zoonotic potential – “cat scratch disease”
- Correlation of infection with disease is unclear
 - Most infected cats remain clinically normal
 - Experimental infection → no ocular disease
- Ocular disease:
 - Lappin 1999: *Bartonella* as a cause for uveitis in a cat
 - Lappin 2000: *Bartonella* antibodies & DNA in AH of cat

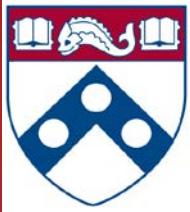


Bartonella Western Blot



- National Veterinary Lab, Inc.
- *FeBart*® Test
 - Western immunoblot
 - ✦ Detects antibodies to all species of *Bartonella*
 - ✦ +3 and +4 considered infected
- Therapy Titration Test
 - ✦ Only way to determine if treatment was successful in elimination
 - ✦ > 4 fold decrease in antibody titers
 - ✦ Performed 6 months or longer after conclusion of treatment





Uveitis Recommended Diagnostics



- Complete Blood Count
- Chemistry Panel
- Urinalysis
- FeLV/FIV
- *Toxoplasma* titers
- *Bartonella* Western Blot
- +/- *Crypto* antigen
- Thoracic radiographs
- Abdominal ultrasound

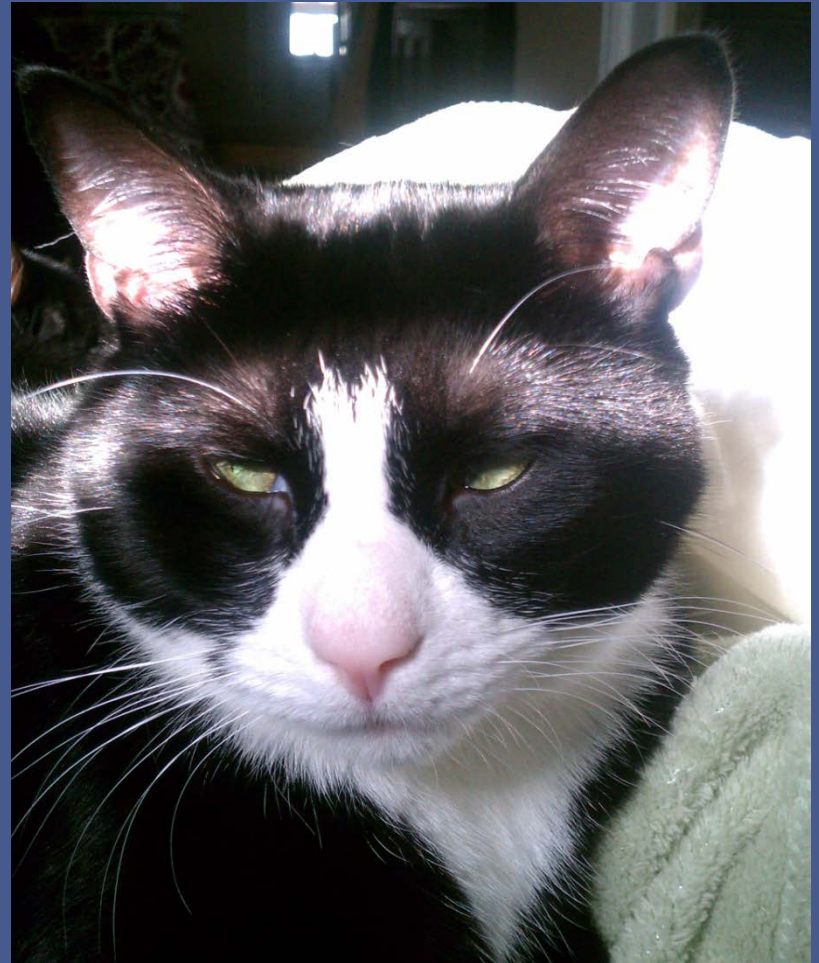




Uveitis Recommended Treatment



- Azithromycin
 - 10 mg/kg PO q24 x 21 days
 - 6 mg/kg PO q24 x 6 wks
 - ✘ Macrolide resistance
- Doxycycline
 - 10 mg/kg PO q12 x 2-6 wks
 - ✘ Caution with pills
 - ✘ Compounded suspension

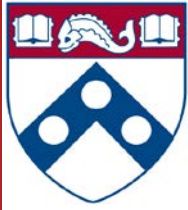




Case #1: “Spartacus” 17y FS Maine Coon



- Presented to ES on 9/20/10
 - CC: dilated pupil OS noted that morning
 - Recent cecal adenocarcinoma resection w/ dirty margins
- Exam Findings
 - Visual OS, IOP 34 mmHg
 - ✦ 1+ flare, KPs, diffuse iridal swelling
 - ✦ Wide-spread MF to coalescing active chorioretinal lesions
 - OD normal
- Diagnosis: Panuveitis with secondary glaucoma OS



Case #1: “Spartacus” 17y FS Maine Coon



- **Diagnostics**
 - CBC: Mild anemia (30%)
 - Chem: NSF
 - UA (cysto): NSF
 - AUS: Scant effusion, healing ileocolic anastomosis
 - *Toxoplasma* titers: IgG 1:512, IgM negative (chronic infection)
 - *Bartonella* western blot: 4+
- **Treatment**
 - Clindamycin initially, added Azithromycin
 - Pred acetate
 - Tim/Dor
 - Adriamycin chemotherapy



Case #1: “Spartacus” 17y FS Maine Coon



- 2 day recheck: IOP < 4 mmHg
 - Anterior uveitis improved, retinal lesions much worse
 - Prednisone 0.5 mg/kg/day
- Weekly rechecks – uveitis resolves, retinal scars
 - Pred acetate discontinued, Tim/Dor tapered
- 1 month post-presentation: carcinoma in suture line
 - Chemo discontinued, surgery declined
- Euthanized 3 months later due to cancer progression



Case #2: “Spencer” 4y MC DSH



- Presented on 12/22/10
 - CC: dilated pupil OS, rDVM suspected optic neuritis
 - Only cat in household, FIV+
 - No major illness, no visual impairment/pain per owner
- Exam Findings
 - Blind OS, IOP 61 mmHg
 - ✦ Mild buphthalmia, mild, diffuse edema, trace AC cells, dark ONH
 - Visual OD, IOP 49 mmHg
 - ✦ No visible lesions
- Diagnosis: Anterior uveitis with secondary glaucoma OU



Case #2: “Spencer” 4y MC DSH

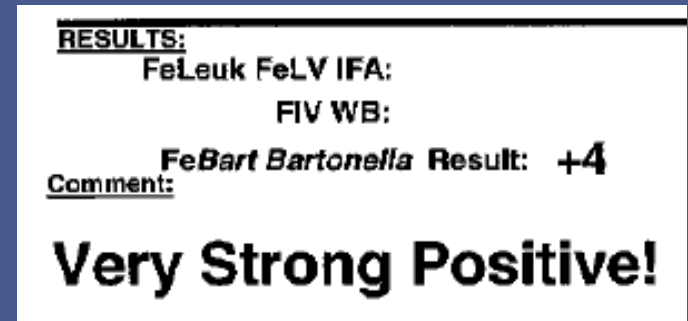


- **Diagnostics**

- CBC: Normal
- Chem: Mild hyperglobulinemia 5.2 g/dL (3.1-5.0)
- *Toxoplasma* titers: IgG negative, IgM negative
- *Bartonella* western blot: +4

- **Treatment**

- Timolol/Dorzolamide OU q8
- Azithromycin 6 mg/kg PO q24 x 6 weeks





Case #2: “Spencer” 4y MC DSH



• Follow Up

- IOPs normalized by 1 month, meds tapered, normal IOP @ 5 months
- 1 year recheck: IOP 46 OS, 10 OD
 - ✦ Tim/Dor OS q8
 - ✦ Blood sample for *Bartonella* Therapy Titration Test: infection cleared
- Recheck 3/1/12: IOP 62 OS, 10 OD
 - ✦ Moderate buphthalmia, severe corneal edema w/ large bullae
 - Enucleation next Tuesday

Bartonella Therapy Titration Test

<u>RESULTS: <i>Bartonella</i> titration test:</u>			<u>Titer Results:</u>
<u>Titer:</u>			
Before Therapy: 1: 128,000	# 257237	Date: 12-24-10	16 fold titer decrease
After Therapy: 1: 8,000	# 278343T	Date: 12-13-11	
Comment:			
Dr. Reinstein, There is an excellent 16 fold titer decrease which indicates elimination of <i>Bartonella</i> infection. This correlates well with the 95% clinical response. Dr. Hardy			



Case #3: “Dingus” 9y MC DSH



- Presented to ES on 6/11/11
 - CC: Cloudy eye x 3 days, dilated pupil x 1 day, lethargy
 - Indoor cat, 1 healthy housemate
- Exam Findings
 - Fixed, dilated pupil OS, strong dazzle, IOP 30 mmHg
 - ✦ Uveitis w/ KPs, mature cataract
 - IV mannitol → no appreciable change in IOP
- Discharged on Pred acetate q8, Tim/Dor q8
 - Recheck w/ Ophtho in morning, diagnostics
 - IOP 10 mmHg, uveitis stable



Case #3: “Dingus” 9y MC DSH



- Diagnostics

- CBC: NSF
- Chem: NSF
- Ocular US: retinal detachment, clot in vitreous
- FeLV/FIV: Neg/Neg
- *Toxoplasma* titers: Negative
- *Bartonella* western blot: +4

- Treatment

- Pred acetate OS q8
- Tim/Dor OS q8
- Azithromycin (3 week course)



Case #3: “Dingus” 9y MC DSH



- 1 month recheck
 - Blind OS, IOP normal, trace cells in AC, mature cataract
 - OD: active uveitis, IOP 8 mmHg
 - ✦ Pred acetate, atropine
 - ✦ Doxycycline suspension (10 mg/kg q12)
 - Persistent vomiting → back to Azithromycin 6 mg/kg q24 x 6wks
- Presented to ES 8/19/11 (2 months)
 - CC: Severe pain associated w/ meds, eye looks different
 - Ophtho consult: buphthalmia, axial ulcer, anterior lens lux
 - ✦ Unable to fully examine (fractious)
 - Transconjunctival enucleation OS 8/ 21 → histopathology



Case #3: “Dingus” 9y MC DSH



- Histopathology of OS
 - Chronic, lymphoplasmacytic anterior uveitis
 - Glaucoma (scleral thinning, uveal atrophy, loss of GCs)
 - Retinal detachment
- Recheck 9 days post-op
 - Enucleation site healing, acutely painful w/ meds in OD
 - ✦ Serous discharge, mild chemosis, MF linear corneal ulcers (FHV-1)
 - Ofloxacin OD q8, continued Atropine q24
 - Famciclovir 125 mg PO q12 x 2 weeks



Case #3: “Dingus” 9y MC DSH



- Rechecks
 - Ulcers healed in 1 week, uveitis resolved, off all meds @ 5 mos
 - Optixcare q12 for life, L-lysine treats for life
- *Bartonella* Therapy Titration Test
 - 7 months post-therapy

<u>RESULTS: <i>Bartonella</i> titration test:</u>			<u>Titer Results:</u>
	<u>Titer:</u>		
Before Therapy: 1: 256,000	# 267474	Date: 6-17-11	4 fold titer decrease
After Therapy: 1: 64,000	# 280453T	Date: 1-19-12	
Comment:			
Dr. Reinstein, There is a 4 fold titer decrease which indicates elimination of <i>Bartonella</i> infection. This correlates well with the 100% clinical response.			
Dr. Hardy			



Case #4: “Shane” 8.5 y MC DSH



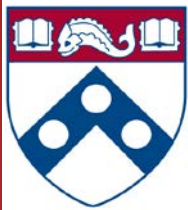
- Presented 6/27/11
 - CC: enlarged pupil, purplish color x 1 month
 - rDVM suspected iris tumor, no medications
- Exam Findings
 - IOP 9 mmHg OD, 5 mmHg OS
 - 2+ flare, posterior synechia, rubeosis irides, fibrin on ALC OS
 - ✦ Focal active chorioretinal lesion OS
 - Hyperreflective retinal scar OD
- Diagnosis: Panuveitis OS, retinal scar OD



Case #4: “Shane” 8.5 y MC DSH



- Diagnostics
 - CBC: NSF
 - Chem: NSF
 - FeLV/FIV: neg/neg
 - *Toxoplasma* titers: Negative
 - *Bartonella* western blot: +4
- Treatment
 - Pred acetate OS q24
 - Azithromycin 6 mg/kg PO q24 x 6 weeks
- Lost to follow up



Case #5: “Leroy” 9y MC DSH



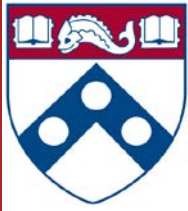
- Presented 8/17/11
 - CC: brown discoloration of iris
 - ✦ Yellow/brown “swirl” in pupil ~ 1.5 y previous
 - ✦ Progressive color change of iris, pupil abnormal
 - ✦ FIV +, chronic rhinitis, struvite crystalluria
- Exam Findings
 - Visual, comfortable, IOPs 13 OD, 11 OS
 - ✦ 360 degree ghost vessels OS
 - ✦ Generalized iris thickening, darker golden in color
 - ✦ Diffuse pigment on ALC w/ subcapsular cataracts
 - OD normal
- Diagnosis: Inactive, historical anterior uveitis OS



Case #5: “Leroy” 9y MC DSH



- Diagnostics:
 - Recent CBC/Chem @ rDVM normal
 - *Toxoplasma* titers: Negative
 - *Bartonella* western blot: +4
- Treatment
 - Azithromycin 6 mg/kg/day x 6 weeks
- Rechecks: Lesions unchanged
- Therapy Titration Test planned for next week...



Case #6: “Bunny” 4y MC Russian Blue



- Presented to ES on 11/26/11
 - CC: Pale spot on iris, abnormal pupil shape
 - ✦ Color change present ~ 1.5 weeks, quadrupled in size past 4 days
 - Rescued 1 year prior
 - ✦ Several small masses along margin of ears, grown past few weeks
- Exam Findings
 - Visual OU w/ sluggish PLRs OS, IOP 20 OD, 14 OS
 - ✦ Large KPs, no flare, 1+ cell OS
 - ✦ Focal, pink, raised iridal lesion (4-7 o'clock) w/ ectropion uvea
 - ✦ 3 focal retinal hemorrhages
 - OD – small KPs, trace AC cell
 - Multiple, 1-3mm, grey colored nodules on right ear tip



Case #6: “Bunny” 4y MC Russian Blue



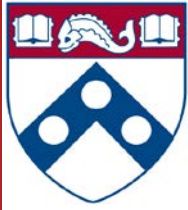
- Initial Diagnostics:

- CBC: Mild anemia (31%)
- Chemistry: Mild hyperglobulinemia 5.1 g/dL (3.1-5)
- FeLV/FIV: Neg/Neg
- *Toxoplasma* titers: Negative

- Thoracic radiographs: NSF
- Abdominal ultrasound: NSF

- *Bartonella* western blot: +4

- FNA of ear tip masses: Pyogranulomatous inflammation



Case #6: “Bunny” 4y MC Russian Blue



- 5 days later: Brief anesthesia for paracentesis, ear biopsy
 - Iridal lesion worse
 - Anterior chamber paracentesis/iris mass FNA:
 - ✦ Small numbers of leukocytes, hemodilution
 - Biopsy of nodules on ear tip
 - ✦ Pyogranulomatous dermatitis
 - Negative for fungal, acid-fast, bacterial stains
- Treatment
 - Pred acetate OU q8
 - Atropine OS q24
 - Ofloxacin OS q8
 - Azithromycin 6 mg/kg/day x 6 weeks



Case #6: “Bunny” 4y MC Russian Blue



- 1 month recheck
 - Owner reports recent difficulty administering topical meds
 - Continues to squint, left eye still looks red
 - ✦ IOP 10 OD, 9 OS
 - ✦ Axial, vascularized corneal ulcer with loose epithelial lip OS
 - Dry debridement
 - ✦ Iridal swelling had progressed
 - 1 o'clock – 7 o'clock OS
 - OD iris still normal
 - Pred discontinued, topical Cidofovir OS q12
 - Recommended recheck in 2 wks...



Case #6: “Bunny” 4y MC Russian Blue



- 2 months later...(last week)
 - Both eyes steadily looking worse to owner
 - Azithromycin finished, Cidofovir and Atropine discontinued
 - Thick KPs OU, 2+ flare, shallow anterior chambers OU
 - ✦ Severe, diffuse iris grey discoloration, swelling, profound rubeosis OU
 - ✦ 360 degree posterior synechia w/ iris bombe OU
 - Bullous retinal detachments OU



Case #6: “Bunny” 4y MC Russian Blue



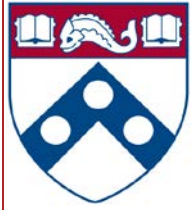
- Additional diagnostics:
 - Repeat CBC/Chem: NSF
 - *Cryptococcus* antigen: Negative
 - Declined for now: subretinal aspirates, repeat aqueocentesis, enucleation for histopathology, repeat body imaging
- Treatment
 - Pred acetate OU q6
 - Cidofovir OU q12
 - Doxycycline suspension (10mg/kg q12)
- Phone update: Eyes “much better”, vomited a few times...



Discussion



- Trends
 - Male cats over represented
 - Anterior uveitis predominated over retinal pathology
- Results of 2 titration tests indicate successful treatment
 - Resolution of clinical disease, decrease in titers
- Causal relationship remains unclear
 - Indication to test for *Bartonella* in cats w/ uveitis
 - Treatment is recommended when infection is documented in sick cats



Audience Participation (thanks!)



- Thoughts?
- Experiences?
- Recommendations?