1) The uveitis is profiled
2) The profiled case is meshed
3) A differential diagnosis list is generated
4) Studies are obtained to identify the etiology
5) Treatment appropriate for the etiology is initiated
Uveitis: **Posterior**

*If inflammation is located...*

- Primarily in the choroid
  - It is called: ?

- In both the choroid and the retina
  - It is called: ?

- Primarily in the retina
  - It is called: ?

- Involving the ONH and the retina
  - It is called: ?

1) The uveitis is profiled
2) The profiled case is meshed
3) A differential diagnosis list is generated
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5) Treatment appropriate for the etiology is initiated
If inflammation is located…

- Primarily in the choroid
  - *It is called:* Choroiditis

- In both the choroid and the retina
  - *It is called:* Chorioretinitis or Retinochoroiditis

- Primarily in the retina
  - *It is called:* Retinitis

- Involving the ONH and the retina
  - *It is called:* Neuroretinitis

---

1) The uveitis is profiled
2) The profiled case is meshed
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4) Studies are obtained to identify the etiology
5) Treatment appropriate for the etiology is initiated
Uveitis: **Posterior**

*If inflammation is located…*

- Primarily in the choroid
  - *It is called:*
  - **Choroiditis**

- In both the choroid *and* the retina
  - *It is called:*
  - **Chorioretinitis**
  - **Retinochoroiditis**

- Primarily in the retina
  - *It is called:*
  - **Retinitis**

- Involving the ONH *and* the retina
  - *It is called:*
  - **Neuroretinitis**

---

What are some of the causes of neuroretinitis?

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Uveitis: **Posterior**

If inflammation is located…

- Primarily in the choroid
  - It is called: Choroiditis
- In both the choroid and the retina
  - It is called: Chorioretinitis or Retinochoroiditis
- Primarily in the retina
  - It is called: Retinitis

Involving the ONH and the retina
- It is called: Neuroretinitis
  - Syphilis/sarcoid/TB
  - Toxocariasis
  - Toxoplasmosis
  - Lyme
  - DUSN
  - Malignant HTN
  - Increased ICP
  - AION
  - Leber’s idiopathic stellate neuroretinitis
  - Bartonellosis

What are some of the causes of neuroretinitis?
Uveitis: **Posterior**

*If inflammation is located…*

- Primarily in the choroid
  - *It is called:* Choroiditis

- In both the choroid *and* the retina
  - *It is called:* Chorioretinitis *or* Retinochoroiditis

- Primarily in the retina
  - *It is called:* Retinitis

*Involving the ONH and the retina*  
- *It is called:* Neuroretinitis

What are some of the causes of neuroretinitis?

*Of these, which is the most common cause?*
Uveitis: **Posterior**

*If inflammation is located…*

- Primarily in the choroid
  - It is called: Choroiditis
- In both the choroid and the retina
  - It is called: Chorioretinitis or Retinochoroiditis
- Primarily in the retina
  - It is called: Retinitis

**Involving the ONH and the retina**

- It is called: Neuroretinitis
  - Syphilis/sarcoid/TB
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  - Toxoplasmosis
  - Lyme
  - DUSN
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  - Increased ICP
  - AION
  - Leber’s idiopathic stellate neuroretinitis
  - Bartonellosis

*What are some of the causes of neuroretinitis?*

*Of these, which is the most common cause?*

Bartonellosis, by a mile
What is the causative organism in Bartonellosis?
Uveitis: **Bartonellosis**

**Basics**

*What is the causative organism in Bartonellosis?*

*Bartonella henslæ*
Uveitis: **Bartonellosis**

**Basics**

What is the causative organism in Bartonellosis?  
*Bartonella henselae*

What sort of organism is it (in a microbiology sense)?
Uveitis: **Bartonellosis**

**Basics**

*What is the causative organism in Bartonellosis?*
*Bartonella henselae*

*What sort of organism is it (in a microbiology sense)?*
*It is a bacterium, specifically a rod vs cocc*
Uveitis: *Bartonellosis*

**Basics**

What is the causative organism in Bartonellosis? 
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What sort of organism is it (in a microbiology sense)? 
It is a bacterium, specifically a rod
Uveitis: **Bartonellosis**

### Basics

**What is the causative organism in Bartonellosis?**
*Bartonella henselae*

**What sort of organism is it (in a microbiology sense)?**
It is a bacterium, specifically a rod

**Is it Gram positive, or Gram negative?**
Uveitis: **Bartonellosis**

**Basics**

*What is the causative organism in Bartonellosis?*

*Bartonella henselae*

*What sort of organism is it (in a microbiology sense)?*

It is a bacterium, specifically a rod

*Is it Gram positive, or Gram negative?*

It is G(-)
Uveitis: **Bartonellosis**

**Basics**

*What is the causative organism in Bartonellosis?*
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*What sort of organism is it (in a microbiology sense)?*
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*How are humans infected?*
Uveitis: *Bartonellosis*

**Basics**

*What is the causative organism in Bartonellosis?*
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*What sort of organism is it (in a microbiology sense)?*
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*How are humans infected?*
*Via a bite, scratch or lick from a cat (especially kittens)*
Uveitis: **Bartonellosis**

**Basics**

*What is the causative organism in Bartonellosis?*
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*What is the common name for Bartonellosis?*
Uveitis: **Bartonellosis**

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*How are humans infected?*
Via a bite, scratch or lick from a cat (especially kittens)

*What is the common name for Bartonellosis?*
Cat-scratch disease (CSD)
Uveitis: **Bartonellosis**

**Basics**

*What is the causative organism in Bartonellosis?*

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*What sort of organism is it (in a microbiology sense)?*

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*How are humans infected?*

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*What is the common name for Bartonellosis?*

Cat-scratch disease (CSD)

*What animals serve as the reservoir for the disease?*
Basics

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Cat-scratch disease (CSD)

What animals serve as the reservoir for the disease?
The cat is the primary reservoir
Uveitis: **Bartonellosis**

**Basics**

*What is the causative organism in Bartonellosis?*

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*What is the common name for Bartonellosis?*

Cat-scratch disease (CSD)

*What animals serve as the reservoir for the disease?*

The cat is the primary reservoir

*What regions of the US have the highest annual incidence of CSD?*
Uveitis: **Bartonellosis**

**Basics**

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*What sort of organism is it (in a microbiology sense)?*
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*What is the common name for Bartonellosis?*
Cat-scratch disease (CSD)

*What animals serve as the reservoir for the disease?*
The cat is the primary reservoir

*What regions of the US have the highest annual incidence of CSD?*
The South, California, and Hawaii, and two specific states outside of it
**Bartonellosis**

**Basics**

*What is the causative organism in Bartonellosis?*
*Bartonella henslee*

*What sort of organism is it (in a microbiology sense)?*
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Cat-scratch disease (CSD)

What animals serve as the reservoir for the disease?  
The cat is the primary reservoir

What regions of the US have the highest annual incidence of CSD?  
The South, California, and Hawaii

What time of year is it most likely to occur?
Uveitis: Bartonellosis

Basics

What is the causative organism in Bartonellosis?
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What animals serve as the reservoir for the disease?
The cat is the primary reservoir

What regions of the US have the highest annual incidence of CSD?
The South, California, and Hawaii

What time of year is it most likely to occur?
The fall and winter months
Uveitis: **Bartonellosis**

### Basics

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**What age group is most likely to be affected?**
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*How are humans infected?*
Via a bite, scratch or lick from a cat (especially kittens)

*What is the common name for Bartonellosis?*
Cat-scratch disease (CSD)

*What animals serve as the reservoir for the disease?*
The cat is the primary reservoir

*What regions of the US have the highest annual incidence of CSD?*
The South, California, and Hawaii

*What time of year is it most likely to occur?*
The fall and winter months

*What age group is most likely to be affected?*
Children under the age of 10 years
Uveitis: *Bartonellosis*

*Basics*

How does CSD present?

--First, a *three words* appears at the inoculation site

--
How does CSD present?
--First, a focal vesciculopustular rash appears at the inoculation site--
Uveitis: *Bartonellosis*

**Basics**

*How does CSD present?*
--First, a focal vesciculopustular rash appears at the inoculation site
- amount of time later, two words develops, accompanied by a two different words
Uveitis: *Bartonellosis*

How does CSD present?
--First, a focal vesiculopustular rash appears at the inoculation site
--1-2 weeks later, regional lymphadenopathy develops, accompanied by a flulike syndrome
Uveitis: **Bartonellosis**

**Basics**

*How does CSD present?*

--First, a focal vesciculopustular rash appears at the inoculation site

--1-2 weeks later, regional lymphadenopathy develops, accompanied by a flulike syndrome

*What percent of pts will go on to develop ophthalmic involvement?*
Uveitis: **Bartonellosis**

*Basics*

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Uveitis: **Bartonellosis**

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What is the most common ophthalmic manifestation? (Hint: It’s not neuroretinitis)
Parinaud oculoglandular syndrome (POS)
Uveitis: **Bartonellosis**

**Basics**

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*What are the two hallmarks of POS?*
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What are the two hallmarks of POS?
--A unilateral granulomatous conjunctivitis (note: NOT anterior uveitis)
--Ipsilateral preauricular and/or submandibular lymphadenopathy
Uveitis: Bartonellosis

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We tend to think of conjunctivitis as coming in two ‘flavors’: papillary and follicular. Note that granulomatous conjunctivitis represents an entirely different clinical entity.
Uveitis: Bartonellosis

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Is Bartonella the only bug that causes POS?
Uveitis: *Bartonellosis*

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*Is Bartonella the only bug that causes POS?*
No, a handful of others can as well:
Uveitis: *Bartonellosis*

**Basics**

*How does CSD present?*
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*Is Bartonella the only bug that causes POS?*
No, a handful of others can as well:
--*Chlamydia trachomatis*
--*Francisella tularensis*
--Syphilis
--TB
Uveitis: **Bartonellosis**

**Basics**

*How does CSD present?*
--First, a focal vesiculopustular rash appears at the inoculation site
--1-2 weeks later, regional lymphadenopathy develops, accompanied by a flulike syndrome

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*Is Bartonella the only bug that causes POS?*
No, a handful of others can as well:
--*Chlamydia trachomatis*
--**Francisella tularensis**
--Syphilis
--TB

**F. tularensis** is the causative organism for what disease?
Uveitis: **Bartonellosis**

**Basics**

How does CSD present?
- First, a focal vesciculopustular rash appears at the inoculation site
- 1-2 weeks later, regional lymphadenopathy develops, accompanied by a flulike syndrome

What percent of pts will go on to develop ophthalmic involvement?
5-10

What is the most common ophthalmic manifestation? *(Hint: It’s not neuroretinitis)*
Parinaud oculoglandular syndrome (POS)

What are the two hallmarks of POS?
- A unilateral granulomatous conjunctivitis *(note: NOT anterior uveitis)*
- Ipsilateral preauricular and/or submandibular lymphadenopathy

Is Bartonella the only bug that causes POS?
No, a handful of others can as well:
- Chlamydia trachomatis
- *Francisella tularensis*
- Syphilis
- TB

F *tularensis* is the causative organism for what disease?
Tularemia
Uveitis: **Bartonellosis**

**Basics**

*How does CSD present?*
--First, a focal vesciculopustular rash appears at the inoculation site
--1-2 weeks later, regional lymphadenopathy develops, accompanied by a flulike syndrome

*What percent of pts will go on to develop ophthalmic involvement?*
5-10

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Parinaud oculoglandular syndrome (POS)

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*Is Bartonella the only bug that causes POS?*
No, a handful of others can as well:
--Chlamydia trachomatis
--Francisella tularensis
--Syphilis
--TB

---

**F tularensis is the causative organism for what disease?**
Tularemia

*What event would clue you in that a pt might have tularemia?*
Uveitis: **Bartonellosis**

**Basics**

*How does CSD present?*
- First, a focal vesiculopustular rash appears at the inoculation site
- 1-2 weeks later, regional lymphadenopathy develops, accompanied by a flulike syndrome

*What percent of pts will go on to develop ophthalmic involvement?*
5-10

*What is the most common ophthalmic manifestation? (Hint: It’s not neuroretinitis)*
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*What are the two hallmarks of POS?*
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*Is Bartonella the only bug that causes POS?*
No, a handful of others can as well:
- *Chlamydia trachomatis*
- **Francisella tularensis**
- Syphilis
- TB

**F tularensis is the causative organism for what disease?**
Tularemia

*What event would clue you in that a pt might have tularemia?*
Direct contact with wild animals (eg, rabbits; raccoons)
Uveitis: **Bartonellosis**

**Basics**

*How does CSD present?*
--First, a focal vesciculopustular rash appears at the inoculation site
--1-2 weeks later, regional lymphadenopathy develops, accompanied by a flulike syndrome

*What percent of pts will go on to develop ophthalmic involvement?*
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*Is Bartonella the only bug that causes POS?*
No, a handful of others can as well:
--*Chlamydia trachomatis*
--*Francisella tularensis*
--Syphilis
--TB
--?

*There are several noninfectious causes of Parinaud oculoglandular syndrome. Which should come to mind here?*
Uveitis: **Bartonellosis**

**Basics**

*How does CSD present?*
- First, a focal vesciculopustular rash appears at the inoculation site
- 1-2 weeks later, regional lymphadenopathy develops, accompanied by a flulike syndrome

*What percent of pts will go on to develop ophthalmic involvement?*
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*Is Bartonella the only bug that causes POS?*
No, a handful of others can as well:
- *Chlamydia trachomatis*
- *Francisella tularensis*
- Syphilis
- TB
  -- Sarcoid

*There are several noninfectious causes of Parinaud oculoglandular syndrome. Which should come to mind here?*
Uveitis: **Bartonellosis**

**Basics**

*How does CSD present?*
--First, a focal vesciculopustular rash appears at the inoculation site
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5-10

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*Is Bartonella the only bug that causes POS?*
No, a handful of others can as well:
--Chlamydia trachomatis
--Francisella tularensis
--Syphilis
--TB

**Why should sarcoid come to mind?**

There are several noninfectious causes of Parinaud oculoglandular syndrome. *Which should come to mind here?*
Uveitis: **Bartonellosis**

### Basics

How does CSD present?
- First, a focal vesciculopustular rash appears at the inoculation site
- 1-2 weeks later, regional lymphadenopathy develops, accompanied by a flulike syndrome

What percent of pts will go on to develop ophthalmic involvement?
5-10

What is the most common ophthalmic manifestation? *(Hint: It’s not neuroretinitis)*
Parinaud oculoglandular syndrome (POS)

What are the two hallmarks of POS?
- A unilateral granulomatous **conjunctivitis** (note: NOT anterior uveitis)
- Ipsilateral preauricular and/or submandibular lymphadenopathy

Is Bartonella the only bug that causes POS?  
No, a handful of others can as well:  
- *Chlamydia trachomatis*
- *Francisella tularensis*
- *Syphilis!*
- *TB!*
- **Sarcoid!**  

Why should sarcoid come to mind?  
Because once again, it is showing up in a DDx alongside syphilis and TB. The three ‘great imitators’ strike again!

There are several noninfectious causes of Parinaud oculoglandular syndrome.  
**Which should come to mind here?**
Uveitis: *Bartonellosis*

What percent of CSD pts will go on to develop neuroretinitis?
Uveitis: Bartonellosis

Neuroretinitis

What percent of CSD pts will go on to develop neuroretinitis?
Only 1-2
Uveitis: Bartonellosis

What percent of CSD pts will go on to develop neuroretinitis?
Only 1-2

How does CSD neuroretinitis present?
Uveitis: **Bartonellosis**

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What will DFE reveal?
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*Which layer of the retina contains the exudates, and is thus responsible for the macular star?*
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In addition to neuroretinitis, how else can CSD manifest in the posterior pole?
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As a focal or multifocal retinochoroiditis (this is actually **more** common than neuroretinitis)
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5. In addition to neuroretinitis, how else can CSD manifest in the posterior pole?
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6. Will slit-lamp exam reveal other signs of inflammation?
   Yes, anterior and vitreous cell are both usually present
How is the diagnosis of CSD neuroretinitis made?

**Uveitis: Bartonellosis**

1) The uveitis is profiled
2) The profiled case is meshed
3) A differential diagnosis list is generated
4) Studies are obtained to identify the etiology
5) Treatment appropriate for the etiology is initiated
Uveitis: **Bartonellosis**

**Diagnosis**

*How is the diagnosis of CSD neuroretinitis made?*
Via the clinical presentation accompanied by confirmatory labs
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Uveitis: *Bartonellosis*

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CSD is almost always a self-limiting condition; the vast majority of pts will recover completely
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What about steroids--should they be given?
The Uveitis book says their efficacy is “unknown”