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

What are the four basic anatomic locations in which uveitis can originate?
What are the four basic anatomic locations in which uveitis can originate?
Which location is most likely to manifest uveitis caused by Toxocara?
Uveitis

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

Which location is most likely to manifest uveitis caused by Toxocara?
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: ?

What do we call each form of uveitis?

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
If inflammation is located…

- Primarily in the choroid: Choroiditis
  - Primarily in the retina: Retinitis
  - In both the choroid and the retina: Chorioretinitis or Retinochoroiditis
- Involving the ONH and the retina: Neuroretinitis

What do we call each form of uveitis?

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Uveitis: **Posterior**

1. The uveitis is profiled
2. The profiled case is meshed
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With which form is *Toxocara* most likely to present?
Uveitis: **Posterior**

1. The uveitis is profiled
2. The profiled case is meshed
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5. Treatment appropriate for the etiology is initiated

**Chorioretinitis or Retinochoroiditis**
- Syphilis
- Histoplasmosis
- Toxoplasmosis
- **Toxocariasis**

**Retinitis**
- AZOOR
- CMV
- ARN/PORN
- Rubella
- Rubeola
- SSPE
- SLE
- PAN/MPA
- Wegener’s

**Neuroretinitis**
- Syphilis/sarcoid/TB
- Toxocariasis
- Toxoplasmosis
- Lyme
- Leber’s idiopathic stellate neuroretinitis
- DUSN
- Bartonellosis

*With which form is Toxocara most likely to present?*
Uveitis: Toxocariasis

Overview

Who is the typical ocular toxocariasis pt in the US?

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Uveitis: *Toxocariasis*

**Overview**

*Who is the typical ocular toxocariasis pt in the US?*
A non-Hispanic white child (or much less commonly, young adult)
Uveitis: *Toxocariasis*

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*Who is the typical ocular toxocariasis pt in the US?*
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*What sort of bug is Toxocara?*
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What sort of bug is Toxocara?
A nematode
Uveitis: *Toxocariasis*

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*In layman’s terms, what is a ‘nematode’?*

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**Uveitis: Toxocariasis**

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*In layman’s terms, what is a ‘nematode’?*
A roundworm

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Toxocara canis
Uveitis: *Toxocariasis*

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*What animals are the principal hosts?*

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How is the worm acquired by humans?
Uveitis: **Toxocariasis**

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*How is the worm acquired by humans?*  
Usually via consumption of contaminated soil
Uveitis: Toxocariasis

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Does VLM produce an elevated WBC count?
Yes
Which specific immune-cell count is affected?
Eosinophilia proportional to the disease burden (ie, the more worms, the higher the eos)

Is ocular toxocariasis produce an eosinophilia?
No, so don’t let a normal WBC count push you off the diagnosis
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Does ocular toxocariasis present unilaterally, or bilaterally?
It is virtually always
Uveitis: *Toxocariasis*

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*Does ocular toxocariasis present unilaterally, or bilaterally?*
It is virtually always *unilateral*
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At what point in the Toxocara life-cycle does inflammation occur?
When the larvae die

Ocular toxocariasis presents three ways. What are they? What % of cases comprise each?
--Chronic endophthalmitis: ?
--Macular granuloma: ?
--Peripheral granuloma: ?
Who is the typical ocular toxocariasis pt in the US?
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At what point in the Toxocara life-cycle does inflammation occur?
When the larvae die

Ocular toxocariasis presents three ways. What are they? What % of cases comprise each?
--Chronic endophthalmitis: 25%
--Macular granuloma: 25%
--Peripheral granuloma: 50%
Uveitis: Toxocarisis

Overview

Who is the typical ocular toxocarisis pt in the US?
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What animals are the principal hosts?
Dogs and cats

How is the worm acquired by humans?
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Do VLM and ocular dz occur simultaneously?
Essentially never

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When the larvae die

Ocular toxocarisis presents three ways. What are they?
--Chronic endophthalmitis: 25%
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What is the hallmark finding in Toxocara endophthalmitis?
Who is the typical ocular toxocariasis pt in the US?
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When the larvae die

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--**Chronic endophthalmitis**: 25%
--Macular granuloma: 25%
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What is the hallmark finding in *Toxocara endophthalmitis*?
A dense, cloudy vitreous membrane
Uveitis: **Toxocariasis**

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**--Chronic endophthalmitis: 25%**

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What is the hallmark finding in Toxocara endophthalmitis?
A dense, cloudy vitreous membrane

What one-word description characterizes the overall appearance of an eye with Toxocara endophthalmitis?
Uveitis: **Toxocariasis**

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What is the hallmark finding in Toxocara endophthalmitis?
A dense, cloudy vitreous membrane

What one-word description characterizes the overall appearance of an eye with Toxocara endophthalmitis?
‘Leukocoria.’ This is the specific form of ocular toxocariasis that is in the DDx for leukocoria.
Toxocariasis: Leukocoria
**Uveitis: Toxocariasis**

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When the larvae die

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What is the #1 most dreaded condition on the leukocoria DDx, the one that must always, always be ruled out?
‘Leukocoria.’ This is the specific form of ocular toxocariasis that is in the DDx for leukocoria.
Uveitis: **Toxocariasis**

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What is the hallmark finding in Toxocara endophthalmitis?  
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**Retinoblastoma (Rb)**

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Ocular toxocariasis presents three ways. What are they? What % of cases comprise each?
--Chronic endophthalmitis: 25%
--Macular granuloma: 25%
--**Peripheral granuloma: 50%**

What is the hallmark finding in the peripheral granuloma form?
Uveitis: **Toxocariasis**

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Yes; it’s called **visceral larvae migrans** (VLM)

*Do VLM and ocular dz occur simultaneously?*
Essentially never

*At what point in the Toxocara life cycle does inflammation occur?*
When the larvae die

Ocular toxocariasis presents three ways. What are they? What % of cases comprise each?

--Chronic endophthalmitis: 25%
--Macular granuloma: 25%
--**Peripheral granuloma:** 50%

---

**What is the hallmark finding in the peripheral granuloma form?**
A peripheral retinal mass connected by dense fibrous strands to the optic disc, resulting in a ‘dragged disc’ appearance
Toxocariasis: Peripheral granuloma
Toxocariasis: Peripheral granuloma: Disc dragging
**Uveitis: Toxocariasis**

**Overview**

*Who is the typical ocular toxocariasis pt in the US?*
A non-Hispanic white child (or much less commonly, young adult)

*What sort of bug is Toxocara?*
A nematode

*In layman’s terms, what is a ‘nematode’?*
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--Retinopathy of prematurity (ROP) 
--Familial exudative vitreoretinopathy (FEVR)
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**Ocular toxocariasis presentation**

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---Retinopathy of prematurity (ROP)
---Familial exudative vitreoretinopathy (FEVR)

*In a nutshell, what sort of condition is FEVR?*
A vitreoretinal dystrophy

Despite the similarity in appearances, one key attribute of FEVR will usually distinguish it from ocular toxocariasis. What is this attribute?
FEVR is usually bilateral (albeit often asymmetrically so), whereas as mentioned, ocular toxocariasis is almost always unilateral.

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What % of cases comprise each? 
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--Chronic endophthalmitis: 25%
--Macular granuloma: 25%
--Peripheral granuloma: 50% (looks like ROP or FEVR)

So, while the *peripheral granuloma* form of ocular toxocariasis must be differentiated from ROP and FEVR…
Uveitis: **Toxocariasis**

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--- **Chronic endophthalmitis**: 25% (looks like Rb)
--- Macular granuloma: 25%
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These are largely posterior findings. What about the anterior segment?
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Re the AC reaction: Is it granulomatous, or nongranulomatous?
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Do VLM and ocular toxocariasis occur at the same time?
Essentially never

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**Ocular toxocariasis presents three ways.** **What are they? What % of cases comprise each?**

- Chronic endophthalmitis: 25%
- Macular granuloma: 25%
- Peripheral granuloma: 50%
- Diffuse unilateral subacute neuroretinitis (DUSN)

---

There is fourth, very uncommon presentation of Toxocara of which you should be aware. **What is it?**
It is one of three nematodes implicated in causing **DUSN**
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It is one of three nematodes implicated in causing DUSN.

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What are the other two worms known to cause DUSN?

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There is fourth, very uncommon presentation of Toxocara of which you should be aware. What is it?

It is one of three nematodes implicated in causing DUSN

What are the other two worms known to cause DUSN?
--Toxocara
--Baylisascaris
--Ancylostoma

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Toxocara canis causing DUSN
How is the diagnosis of ocular toxocariasis made?

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How is the diagnosis of ocular toxocariasis made?

It is primarily a clinical diagnosis

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Uveitis: *Toxocariasis*

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ELISA can be run on intraocular aspirates to detect antibodies to *Toxocara*
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*Suppose the view is too poor to allow examination of the lesion. You are concerned it might be Rb, and thus do not want to aspirate intraocular contents (for fear of seeding Rb cells). What two studies would be helpful in this situation?*

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**B-scan and/or CT.** In the case of Rb, both will reveal the that inevitably occur (and that are not found in toxocariasis).
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**Treatment**

*How is ocular toxocarasis managed?*

The primary goal is to reduce the inflammation (and its sequelae) via local and/or systemic steroids.
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What about antihelminthic therapy?
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**Treatment**

How is ocular toxocariasis managed?
The primary goal is to reduce the inflammation (and its sequelae) via local and/or systemic steroids

What about antihelminthic therapy?
It has not proven to be definitively helpful