Uveitis: **Toxoplasmosis**

**Toxoplasmosis: Basics**

What is the causative organism in ocular toxoplasmosis?
Uveitis: Toxoplasmosis

Toxoplasmosis: Basics

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What is the causative organism in ocular toxoplasmosis?
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*What are its basic properties, ie, what sort of organism is it in a microbiology sense?*
It is a protozoan—an obligate intracellular parasite
*Toxoplasma gondii* intracellular infected host cell containing tachyzoites

*Toxoplasma gondii* intracellular
Uveitis: **Toxoplasmosis**

### Toxoplasmosis: Basics

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A cat
Uveitis: Toxoplasmosis

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**Uveitis: Toxoplasmosis**

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Uveitis: **Toxoplasmosis**

**Toxoplasmosis: Basics**

*T. gondii* has a complex life cycle, existing in three forms.
T. gondii has a complex life cycle, existing in **three forms**. What are they?
T. gondii has a complex life cycle, existing in three forms.

What are they?

- **Oocyst**
- **Tachyzoite**
- **Tissue cyst**
T. gondii has a complex life cycle, existing in **three forms**.

**Oocyst**

**Tachyzoite**

**Tissue cyst**

Each form has a ‘nickname’ capturing its essence. What is the nickname for this form?
Toxoplasmosis: Basics

Toxoplasmosis: Basics

T gondii has a complex life cycle, existing in three forms. What are they?

1. Oocyst
2. Tachyzoite
3. Tissue cyst

Each form has a ‘nickname’ capturing its essence.

What is the nickname for this form?

‘Soil form’
Uveitis: *Toxoplasmosis*

**Toxoplasmosis: Basics**

*T. gondii* has a complex life cycle, existing in **three forms**

What are they?

- **Oocyst**
  - 'Soil form'
- **Tachyzoite**
- **Tissue cyst**

Each form has a 'nickname' capturing its essence.

What is the nickname for this form?
T. gondii has a complex life cycle, existing in three forms. What are they?

- Oocyst: ‘Soil form’
- Tachyzoite: ‘Infectious form’
- Tissue cyst

Each form has a ‘nickname’ capturing its essence. What is the nickname for this form?

Toxoplasmosis: Basics

1) The uveitis is profiled
2) The profiled case is meshed
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5) Treatment appropriate for the etiology is initiated
Uveitis: **Toxoplasmosis**

Toxoplasmosis: Basics

* T. gondii has a complex life cycle, existing in **three forms**
* What are they?

- Oocyst
  - ‘Soil form’

- Tachyzoite
  - ‘Infectious form’

- Tissue cyst

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Uveitis: Toxoplasmosis

Toxoplasmosis: Basics

T. gondii has a complex life cycle, existing in three forms.
What are they?

1. Oocyst
   - 'Soil form'

2. Tachyzoite
   - 'Infectious form'

3. Tissue cyst
   - 'Latent form'

Each form has a 'nickname' capturing its essence.
What is the nickname for this form?
T. gondii has a complex life cycle, existing in **three forms**.

**Toxoplasmosis: Basics**

1. Uveitis is profiled
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**Where does this form reside?**

- **Oocyst**
  - ‘Soil form’
  - Found in...

- **Tachyzoite**
  - ‘Infectious form’

- **Tissue cyst**
  - ‘Latent form’
T. gondii has a complex life cycle, existing in three forms. What are they?

- **Oocyst**
  - "Soil form"
  - Found in GI tract of cat (shed in feces)

- **Tachyzoite**
  - "Infectious form"

- **Tissue cyst**
  - "Latent form"

Uveitis: **Toxoplasmosis**

**Toxoplasmosis: Basics**

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Where does this form reside?

Cat GI tract
T. gondii has a complex life cycle, existing in three forms.

What are they?

- **Oocyst**
  - ‘Soil form’
  - Found in GI tract of cat (shed in feces)

- **Tachyzoite**
  - ‘Infectious form’
  - Found in...

- **Tissue cyst**
  - ‘Latent form’

Where does this form reside?

**Uveitis: Toxoplasmosis**

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**Toxoplasmosis: Basics**
Uveitis: **Toxoplasmosis**

**Toxoplasmosis: Basics**

*T. gondii* has a complex life cycle, existing in **three forms**.

**What are they?**

- **Oocyst**
  - 'Soil form'
  - Found in GI tract of cat (shed in feces)

- **Tachyzoite**
  - 'Infectious form'
  - Found in circulatory system

- **Tissue cyst**
  - 'Latent form'

*Where does this form reside?*

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  - ‘Latent form’
  - Found in...

Where does this form reside?
T. gondii has a complex life cycle, existing in **three forms**. What are they?

**Toxoplasmosis: Basics**

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**T. gondii:**
- **Oocyst**
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- **Tachyzoite**
  - 'Infectious form'
  - Found in circulatory system
- **Tissue cyst**
  - 'Latent form'
  - Found in host tissue

---

**Where does this form reside?**

- Cat GI tract
- Host circulatory system
- Host tissue
Uveitis: *Toxoplasmosis*

**Toxoplasmosis: Basics**

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What are they?

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Infectious?

Is this form infectious?
T. gondii has a complex life cycle, existing in three forms. What are they?

- **Oocyst**
  - ‘Soil form’
  - Found in GI tract of cat (shed in feces)
  - +infectious

- **Tachyzoite**
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  - Found in circulatory system

- **Tissue cyst**
  - ‘Latent form’
  - Found in host tissue

Is this form infectious? Yes
T. gondii has a complex life cycle, existing in **three forms**. What are they?

**Toxoplasmosis: Basics**

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  - Found in GI tract of cat (shed in feces)
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Infectious? Yes

**Is this form infectious?**
**Toxoplasmosis: Basics**

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  - **Oocyst**
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---

**Uveitis: Toxoplasmosis**

1. The uveitis is profiled
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---

Is this form infectious? **Yes**

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Infectious? **Yes**

---

Infectious? **Yes**
Uveitis: **Toxoplasmosis**

**Toxoplasmosis: Basics**

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What are they?

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Infectious? Yes

Infectious? Yes

Infectious?

Is this form infectious?
T. gondii has a complex life cycle, existing in three forms. What are they?

**Oocyst**
- ‘Soil form’
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- Found in circulatory system
- +infectious

**Tissue cyst**
- ‘Latent form’
- Found in host tissue
- +infectious

**Infectious?** Yes

Is this form infectious? Yes
T. gondii has a complex life cycle, existing in three forms. What are they?

**Uveitis: Toxoplasmosis**

**Toxoplasmosis: Basics**

All forms are infectious under the right circumstances. Don’t let the nickname of the tachyzoite form fool you into thinking it’s the only one!
T. gondii has a complex life cycle, existing in **three forms**. What are they?

- **Oocyst**
  - 'Soil form'
  - Found in GI tract of cat (shed in feces)
  - +infectious via...

- **Tachyzoite**
  - 'Infectious form'
  - Found in circulatory system
  - +infectious

- **Tissue cyst**
  - 'Latent form'
  - Found in host tissue
  - +infectious

**How is infection transmitted for this form?**
**Uveitis: Toxoplasmosis**

**Toxoplasmosis: Basics**

*T. gondii* has a complex life cycle, existing in **three forms**

What are they?

- **Oocyst**
  - ‘Soil form’
  - Found in GI tract of cat (shed in feces)
  - Infectious via...
    - Ingestion of contaminated soil

- **Tachyzoite**
  - ‘Infectious form’
  - Found in circulatory system
  - Infectious

- **Tissue cyst**
  - ‘Latent form’
  - Found in host tissue
  - Infectious

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**Infectious via…**

How is infection transmitted for this form?
Toxoplasmosis: Basics

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What are they?

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  - +infectious via...
    - Ingestion of contaminated soil

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  - ‘Infectious form’
  - Found in circulatory system
  - +infectious via...

- **Tissue cyst**
  - ‘Latent form’
  - Found in host tissue
  - +infectious

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How is infection transmitted for this form?
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**Oocyst**
- ‘Soil form’
- Found in GI tract of cat (shed in feces)
- +infectious via...
  - Ingestion of contaminated soil

**Tachyzoite**
- ‘Infectious form’
- Found in circulatory system
- +infectious via...
  - Blood-to-blood contact

**Tissue cyst**
- ‘Latent form’
- Found in host tissue
- +infectious

How is infection transmitted for this form?
Toxoplasmosis: Basics

*T. gondii* has a complex life cycle, existing in **three forms**.

What are they?

- **Oocyst**
  - ‘Soil form’
  - Found in GI tract of cat (shed in feces)
  - Infectious via... *Ingestion of contaminated soil*

- **Tachyzoite**
  - ‘Infectious form’
  - Found in circulatory system
  - Infectious via... *Blood-to-blood contact*

- **Tissue cyst**
  - ‘Latent form’
  - Found in host tissue
  - Infectious via... *Blood-to-blood contact*

---

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*How is infection transmitted for this form?*
Uveitis: **Toxoplasmosis**

**Toxoplasmosis: Basics**

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What are they?

- **Oocyst**
  - ‘Soil form’
  - Found in GI tract of cat (shed in feces)
  - +infectious via...
    - Ingestion of contaminated soil

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  - ‘Infectious form’
  - Found in circulatory system
  - +infectious via...
    - Blood-to-blood contact

- **Tissue cyst**
  - ‘Latent form’
  - Found in host tissue
  - +infectious via...
    - Consumption in foodstuffs

---

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How is infection transmitted for this form?
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**Uveitis:**

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**Toxoplasmosis: Basics**

T. gondii has a complex life cycle, existing in **three forms**.

**Oocyst**
- ‘Soil form’
- Found in GI tract of cat (shed in feces)
- Infectious via...
  - Ingestion of contaminated soil

**Tachyzoite**
- ‘Infectious form’
- Found in circulatory system
- Infectious via...
  - Blood-to-blood contact

**Tissue cyst**
- ‘Latent form’
- Found in host tissue
- Infectious via...
  - Consumption in foodstuffs

---

**What very, very important means of disease transmission is not mentioned here?**

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**How is infection transmitted for this form?**
T. gondii has a complex life cycle, existing in **three forms**.

**Uveitis: Toxoplasmosis**

**Toxoplasmosis: Basics**

What are they?

- **Oocyst**
  - ‘Soil form’
  - Found in GI tract of cat (shed in feces)
  - Infectious via:
    - Ingestion of contaminated soil

- **Tachyzoite**
  - ‘Infectious form’
  - Found in circulatory system
  - Infectious via:
    - Blood-to-blood contact

- **Tissue cyst**
  - ‘Latent form’
  - Found in host tissue
  - Infectious via:
    - Consumption in foodstuffs

**What very, very important means of disease transmission is not mentioned here?**

Transplacentally, resulting in congenital toxoplasmosis (we will have much to say about this later in the slide-set)

**How is infection transmitted for this form?**
T. gondii has a complex life cycle, existing in **three forms**. What are they?

- **Oocyst**
  - ‘Soil form’
  - Found in GI tract of cat (shed in feces)
  - +infectious via...
  - Ingestion of contaminated soil
  - ?

- **Tachyzoite**
  - ‘Infectious form’
  - Found in circulatory system
  - +infectious via...
  - Blood-to-blood contact

- **Tissue cyst**
  - ‘Latent form’
  - Found in host tissue
  - +infectious via...
  - Consumption in foodstuffs

In a nutshell…

In a nutshell, how should we think of each form?

--Oocysts…

---

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**Uveitis: Toxoplasmosis**

**Toxoplasmosis: Basics**

_T. gondii_ has a complex life cycle, existing in **three forms**.

**What are they?**

- **Oocyst**
  - ‘Soil form’
  - Found in GI tract of cat (shed in feces)
  - Infectious via...
    - Ingestion of contaminated soil
  - ‘Spores’

- **Tachyzoite**
  - ‘Infectious form’
  - Found in circulatory system
  - Infectious via...
    - Blood-to-blood contact

- **Tissue cyst**
  - ‘Latent form’
  - Found in host tissue
  - Infectious via...
    - Consumption in foodstuffs

**In a nutshell…**

**In a nutshell, how should we think of each form?**

- Oocysts…are toxo eggs or ‘spores’ (the bug is a sporozoite at this stage)
T. gondii has a complex life cycle, existing in **three forms**

What are they?

- **Oocyst**
  - ‘Soil form’
  - Found in GI tract of cat (shed in feces)
  - Infectious via...
  - Ingestion of contaminated soil
  - ‘Spores’

- **Tachyzoite**
  - ‘Infectious form’
  - Found in circulatory system
  - Infectious via...
  - Blood-to-blood contact

- **Tissue cyst**
  - ‘Latent form’
  - Found in host tissue
  - Infectious via...
  - Consumption in foodstuffs

In a nutshell...

In a nutshell, how should we think of each form?
- Oocysts...are toxo eggs or ‘spores’ (the bug is a sporozoite at this stage)
Uveitis: *Toxoplasmosis*

### Toxoplasmosis: Basics

*T gondii has a complex life cycle, existing in three forms.*

**What are they?**

- **Oocyst**
  - 'Soil form'
  - Found in GI tract of cat (shed in feces)
  - +infectious via...
    - Ingestion of contaminated soil
  - 'Spores'

- **Tachyzoite**
  - 'Infectious form'
  - Found in circulatory system
  - +infectious via...
    - Blood-to-blood contact
  - '?'

- **Tissue cyst**
  - 'Latent form'
  - Found in host tissue
  - +infectious via...
    - Consumption in foodstuffs

---

**In a nutshell…**

- Oocysts…are toxo eggs or ‘spores’ (the bug is a *sporozoite* at this stage)
- Tachyzoites…
Toxoplasmosis: **Basics**

*T. gondii* has a complex life cycle, existing in **three forms**.

**What are they?**

- **Oocyst**
  - ‘Soil form’
  - Found in GI tract of cat (shed in feces)
  - +infectious via…
    - Ingestion of contaminated soil
  - ‘Spores’

- **Tachyzoite**
  - ‘Infectious form’
  - Found in circulatory system
  - +infectious via…
    - Blood-to-blood contact
  - ‘Active adult’

- **Tissue cyst**
  - ‘Latent form’
  - Found in host tissue
  - +infectious via…
    - Consumption in foodstuffs

**In a nutshell…**

- Oocysts…are toxo eggs or ‘spores’ (the bug is a **sporozoite** at this stage)
- Tachyzoites…are toxo ‘adults’ that are **active**
Uveitis: *Toxoplasmosis*

**Toxoplasmosis: Basics**

*T. gondii* has a complex life cycle, existing in **three forms**.

What are they?

- **Oocyst**
  - ‘Soil form’
  - Found in GI tract of cat (shed in feces)
  - +infectious via…
  - Ingestion of contaminated soil
  - ‘Spores’

- **Tachyzoite**
  - ‘Infectious form’
  - Found in circulatory system
  - +infectious via…
  - Blood-to-blood contact
  - ‘Active adult’

- **Tissue cyst**
  - ‘Latent form’
  - Found in host tissue
  - +infectious via…
  - Consumption in foodstuffs
  - ?

---

In a nutshell…

**In a nutshell, how should we think of each form?**

- Oocysts…are toxo eggs or ‘spores’ (the bug is a *sporozoite* at this stage)
- Tachyzoites…are toxo ‘adults’ that are **active**
- The tissue cysts…

---

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
T gondii has a complex life cycle, existing in **three forms**. What are they?

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**Tissue cyst**
- ‘Latent form’
- Found in host tissue
- Infectious via...
  - Consumption in foodstuffs
- ‘Dormant adult’

In a nutshell, how should we think of each form?
- Oocysts...are toxo eggs or ‘spores’ (the bug is a sporozoite at this stage)
- Tachyzoites...are toxo ‘adults’ that are active
- The tissue cysts...contain toxo adults that are dormant
**Uveitis: Toxoplasmosis**

**Toxoplasmosis: Basics**

*T gondii has a complex life cycle, existing in three forms.*

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---

**In a nutshell…**

---

**What is the name for the dormant adults in the tissue cysts?**

**toxo adults that are dormant**
T. gondii has a complex life cycle, existing in **three forms**

What are they?

- **Oocyst**
  - ‘Soil form’
  - Found in GI tract of cat (shed in feces)
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  - ‘Latent form’
  - Found in host tissue
  - + infectious via… Consumption in foodstuffs
  - ‘Dormant adult’

**In a nutshell…**
- Oocysts…are toxo eggs or ‘spores’ (the bug is a sporozoite at this stage)
- Tachyzoites…are toxo ‘adults’ that are active
- The tissue cysts…contain toxo adults that are dormant

What is the name for the dormant adults in the tissue cysts? 
**Bradyzoites**
**Uveitis: Toxoplasmosis**

**Toxoplasmosis: Basics**

*T. gondii* has a complex life cycle, existing in **three forms**.

What are they?

---

**Oocyst**
- ‘Soil form’
- Found in GI tract of cat (shed in feces)
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In a nutshell…

---

**Tachyzoite**
- ‘Infectious form’
- Found in circulatory system
- +infectious via… Blood-to-blood contact
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In a nutshell…

---

**Tissue cyst**
- ‘Latent form’
- Found in host tissue
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- ‘Dormant adult’

In a nutshell…

---

**What is the name for the dormant adults in the tissue cysts?**

**Bradyzoites**

It’s not a coincidence that the active adults are identified as *tachy* (‘fast’) -zoites, whereas the dormant adults are *brady* (‘slow’) –zoites!
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**Toxoplasmosis Basics**

**Toxoplasmosis Basics tl;dr**
The person consumes either oocysts (wash your hands!) or tissue cysts (cook your meat!). The consumed bugs transform into tachyzoites, enter the bloodstream, then disseminate throughout the body. The immune system quickly clears the circulating parasites, but not before some get encased in tissue cysts, which are impervious to the host’s immune system.

---

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(No question—review slide, proceed when ready)
T. gondii has a complex life cycle, existing in three forms. What are they?

**Toxoplasmosis: Basics**

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What foodstuffs are commonly involved?
Uveitis: **Toxoplasmosis**

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---

**What foodstuffs are commonly involved?**

Meat, especially pork

---

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T. gondii has a complex life cycle, existing in three forms. What are they?

Toxoplasmosis: Basics

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What are the three forms of T. gondii?

- **Oocyst**
  - ‘Soil form’
  - Found in GI tract of cat (shed in feces)
  - Infectious via... Ingestion of contaminated soil
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What foodstuffs are commonly involved? Meat, especially pork
Uveitis: **Toxoplasmosis**

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What are they?

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---

What foodstuffs are commonly involved?

- Meat, especially pork
- Fruits and veggies

---

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Uveitis: **Toxoplasmosis**

Toxoplasmosis: Basics

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- Found in host tissue
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**What foodstuffs are commonly involved?**

- Meat, especially pork
- Fruits and veggies
- Milk
- Baa...
Toxoplasmosis: Basics

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**What foodstuffs are commonly involved?**
- Meat, especially pork
- Fruits and veggies
- Goat’s milk
Uveitis: **Toxoplasmosis**

Toxoplasmosis: Basics

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How does toxo get into the animals and/or onto the fruits and veggies?

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  - Found in host tissue
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---

*What foodstuffs are commonly involved?*
- Meat, especially pork
- Fruits and veggies
- Goat’s milk

*How does toxo get into the animals and/or onto the fruits and veggies?*
It gets into animals when they eat feed that has been pooped on by infected cats (ie, that contains oocysts)
*Uveitis: Toxoplasmosis*

**Toxoplasmosis: Basics**

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It gets into animals when they eat feed that has been pooped on by infected cats (ie, that contains oocysts)

**How is toxo able to get into humans from the animals?**
Uveitis: *Toxoplasmosis*

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It gets into animals when they eat feed that has been pooped on by infected cats (ie, that contains oocysts)

*How is toxo able to get into humans from the animals?*
It gets into them when they eat meat that is...
Uveitis: **Toxoplasmosis**

**Toxoplasmosis: Basics**

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---

**What foodstuffs are commonly involved?**
- Undercooked meat, especially pork
- Fruits and veggies
- Goat’s milk

---

**How does toxo get into the animals and/or onto the fruits and veggies?**
It gets into animals when they eat feed that has been pooped on by infected cats (i.e., that contains oocysts).

---

**How is toxo able to get into humans from the animals?**
It gets into them when they eat meat that is undercooked…
T. gondii has a complex life cycle, existing in three forms. What are they?

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- ‘Latent form’
- Found in host tissue
- Infectious via consumption
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**Foodstuffs**
- Undercooked meat, especially pork
- Fruits and veggies
- Goat’s milk

**How does toxo get into the animals and/or onto the fruits and veggies?**
It gets into animals when they eat feed that has been pooped on by infected cats (ie, that contains oocysts).

**How is toxo able to get into humans from the animals? From fruits/veggies?**
It gets into them when they eat meat that is undercooked... eat fruits/veggies that are

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Toxoplasmosis: Basics

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  - Latent form  
  - Found in host tissue  
  - +Infectious via…  
  - Consumption  
  - ‘Dormant adult’

How does toxo get into the animals and/or onto the fruits and veggies?  
It gets into animals when they eat feed that has been pooped on by infected cats (ie, that contains oocysts).

How is toxo able to get into humans from the animals? From fruits/veggies?  
It gets into them when they eat meat that is undercooked…eat fruits/veggies that are unwashed…

Foodstuffs commonly involved:
- Undercooked meat, especially pork
- Unwashed fruits and veggies
- Goat’s milk
T. gondii has a complex life cycle, existing in three forms. What are they?

Uveitis: Toxoplasmosis

Toxoplasmosis: Basics

T. gondii has a complex life cycle, existing in three forms.

Oocyst
- ‘Soil form’
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- Found in host tissue
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What foodstuffs are commonly involved?
- Undercooked meat, especially pork
- Unwashed fruits and veggies
- Goat’s milk

How does toxo get into the animals and/or onto the fruits and veggies?
It gets into animals when they eat feed that has been pooped on by infected cats (ie, that contains oocysts)

How is toxo able to get into humans from the animals? From fruits/veggies? From goat’s milk?
It gets into them when they eat meat that is undercooked... eat fruits/veggies that are unwashed... or drink goat’s milk that is
**Uveitis: Toxoplasmosis**

**Toxoplasmosis: Basics**

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  - ‘Latent form’
  - Found in host tissue
  - Infectious via Consumption
  - ‘Dormant adult’

**What foodstuffs are commonly involved?**
- Undercooked meat, especially pork
- Unwashed fruits and veggies
- Unpasteurized goat’s milk

**How does toxo get into the animals and/or onto the fruits and veggies?**
It gets into animals when they eat feed that has been pooped on by infected cats (ie, that contains oocysts).

**How is toxo able to get into humans from the animals? From fruits/veggies? From goat’s milk?**
It gets into them when they eat meat that is undercooked… eat fruits/veggies that are unwashed… or drink goat’s milk that is unpasteurized.
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

What are the four basic anatomic locations for uveitis?
What are the four basic anatomic locations for uveitis?
1) The uveitis is profiled
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Uveitis

Anterior

Posterior

Intermediate

Panuveitis

Toxoplasmosis

Can toxoplasmosis present with anterior uveitis?
Uveitis

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Anterior

Posterior

Intermediate

Panuveitis

Can toxoplasmosis present with anterior uveitis? Yes

Toxoplasmosis
Uveitis

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Anterior

Posterior

Intermediate

Panuveitis

Can toxoplasmosis present with anterior uveitis? Yes

Let’s drill down on toxoplasmosis anterior uveitis

Toxoplasmosis
Uveitis: *Anterior*

*But first, let’s review the basic taxonomy of anterior uveitis*

*Let’s drill down on toxoplasmosis anterior uveitis*
Uveitis: **Anterior**

What is this first, fundamental way we divvy up anterior uveitis?

*But first, let’s review the basic taxonomy of anterior uveitis*

*Let’s drill down on toxoplasmosis anterior uveitis*
Uveitis: **Anterior**

Granulomatous → Key distinction → Nongranulomatous

What is this first, fundamental way we divvy up anterior uveitis?

*But first, let’s review the basic taxonomy of anterior uveitis*

*Let’s drill down on toxoplasmosis anterior uveitis*
Uveitis: Anterior

Granulomatous → Nongranulomatous

Key distinction

Now this one...

But first, let’s review the basic taxonomy of anterior uveitis

Let’s drill down on toxoplasmosis anterior uveitis
Uveitis: **Anterior**

- Granulomatous
- Nongranulomatous

1) The uveitis is profiled
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**Key distinction**

Acute

Chronic

*Now this one…*

---

**But first, let’s review the basic taxonomy of anterior uveitis**

**Let’s drill down on toxoplasmosis anterior uveitis**
Uveitis: **Anterior**

Granulomatous  
Nongranulomatous

- Acute
- Chronic

Key distinction

But first, let’s review the basic taxonomy of anterior uveitis

Let’s drill down on toxoplasmosis anterior uveitis
Uveitis: **Anterior**

- **Granulomatous**
- **Nongranulomatous**
  - **Acute**
  - **Chronic**
    - **Unilateral**
    - **Bilateral**

**Key distinction**

**Finally…**

*But first, let’s review the basic taxonomy of anterior uveitis*

*Let’s drill down on toxoplasmosis anterior uveitis*
Uveitis: **Anterior**

- **Granulomatous**
  - ?
- **Nongranulomatous**
  - **Acute**
    - Unilateral
    - ?
  - **Chronic**
    - Bilateral
    - ?

Now that the taxonomy is laid out:

*Where does toxoplasmosis reside?*
Uveitis: **Anterior**

- Granulomatous
- Nongranulomatous

  - Acute
  - Chronic

  - Unilateral
  - Bilateral

Toxoplasmosis

Now that the taxonomy is laid out:

*Where does toxoplasmosis reside?*

Among the granulomatous uveitides

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5. Treatment appropriate for the etiology is initiated
Uveitis: **Anterior**

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
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Granulomatous

- ?
- ?
- ?
- ?
- ?
- ?
- ?

Nongranulomatous

- Acute
  - Unilateral
- Chronic
  - Bilateral

What is the rest of the DDx for granulomatous uveitis?

Toxoplasmosis

Now that the taxonomy is laid out: *Where does toxoplasmosis reside?*

Among the granulomatous uveitides
Uveitis: **Anterior**

Granulomatous:
- TB
- Sarcoid
- Syphilis
- HSV
- VKH
- Lyme
- Toxoplasmosis

Nongranulomatous:
- Acute
  - Unilateral
- Chronic
  - Bilateral

What is the rest of the DDx for granulomatous uveitis?

Now that the taxonomy is laid out:  
*Where does toxoplasmosis reside?*  
Among the granulomatous uveitides

---

1) The uveitis is profiled  
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The BCSC Uveitis book does not list toxoplasmosis in the DDx for intermediate uveitis
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OTOH, toxoplasmosis is a premiere cause of posterior uveitis!
Uveitis: **Toxoplasmosis**

Posterior uveitis

...Is divided into three subtypes based on what attribute?

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Uveitis: *Toxoplasmosis*

**Posterior uveitis**

*...Is divided into three subtypes based on what attribute?*

- Inflammation location

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Uveitis: *Toxoplasmosis*

Posterior uveitis

*If inflammation is located…*

- ?
- ?
- ?

*What are the three ‘inflammation locations’?*

- It is called: ?
- It is called: ?
- It is called: ?

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: **Toxoplasmosis**

Posterior uveitis

*If inflammation is located…*

- Exclusively in the choroid
- In both the choroid and the retina
- Exclusively in the retina

**What are the three ‘inflammation locations’?**

- It is called: ?
- It is called: ?
- It is called: ?
Uveitis: **Toxoplasmosis**

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

Posterior uveitis

*If inflammation is located...*

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

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: *Toxoplasmosis*

### Posterior uveitis

*If inflammation is located...*

- Exclusively in the choroid
- In both the choroid *and* the retina
- Exclusively in the retina

**It is called:**

- Choroiditis
- ?
- ?
Uveitis: **Toxoplasmosis**

Posterior uveitis

*If inflammation is located…*

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

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

- Exclusively in the retina
  - *It is called:*
  - ?

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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: *Toxoplasmosis*

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

**Posterior uveitis**

*If inflammation is located…*

- Exclusively in the choroid
- In both the choroid and the retina
- Exclusively in the retina

- *It is called:*
- *It is called:*
- *It is called:*

  - **Choroiditis**
  - ?
  - **Retinitis**
Uveitis: **Toxoplasmosis**

### Posterior uveitis

*If inflammation is located…*

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

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

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

---

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: **Toxoplasmosis**

Posterior uveitis

*If inflammation is located…*

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

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

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

---

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: **Toxoplasmosis**

**Posterior uveitis**

*If inflammation is located...*

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

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

- Exclusively in the retina *and* **ONH**
  - *It is called:*
  - **Retinitis**

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: **Toxoplasmosis**

**Posterior uveitis**

*If inflammation is located...*

- Exclusively in the choroid
  - It is called: Choroiditis

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

- Exclusively in the retina and ONH
  - It is called: Retinitis
  - It is called: Neuroretinitis

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: **Toxoplasmosis**

**Posterior uveitis**

*If inflammation is located…*

- Exclusively in the choroid
  - It is called: **Choroiditis?**

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

- Exclusively in the retina
  - It is called: **Retinitis?**

*What is the classic posterior manifestation of toxoplasmosis?*

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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: **Toxoplasmosis**

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

---

**Posterior uveitis**

*If inflammation is located…*

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

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

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

---

*What is the classic posterior manifestation of toxoplasmosis?*

**Retinochoroiditis**
Uveitis: *Toxoplasmosis*

*Toxoplasmosis: Retinochoroiditis*

What is the classic appearance of an inactive toxoplasmosis lesion?
Uveitis: **Toxoplasmosis**

Toxoplasmosis: Retinochoroiditis

*What is the classic appearance of an inactive toxoplasmosis lesion?*

A pigmented chorioretinal scar
Toxoplasmosis: Inactive scar
Uveitis: **Toxoplasmosis**

**Toxoplasmosis: Retinochoroiditis**

*What is the classic appearance of an inactive toxoplasmosis lesion?*
A pigmented chorioretinal scar

*What is the classic appearance of an **active** toxoplasmosis lesion?*
What is the classic appearance of an inactive toxoplasmosis lesion?
A pigmented chorioretinal scar

What is the classic appearance of an active toxoplasmosis lesion?
A white lesion adjacent to a scar, with overlying vitreous cell
Uveitis: *Toxoplasmosis*

Recurrent ocular toxoplasmosis. Note the active retinal lesion associated with an old inactive scar.
Uveitis: **Toxoplasmosis**

**Toxoplasmosis: Retinochoroiditis**

What is the classic appearance of an inactive toxoplasmosis lesion?
A pigmented chorioretinal scar

What is the classic appearance of an active toxoplasmosis lesion?
A white lesion adjacent to a scar, with overlying vitreous cell

The fact that active lesions are usually adjacent to an old scar indicates what about their origin?
Uveitis: **Toxoplasmosis**

**Toxoplasmosis: Retinochoroiditis**

*What is the classic appearance of an inactive toxoplasmosis lesion?*
A pigmented chorioretinal scar

*What is the classic appearance of an active toxoplasmosis lesion?*
A white lesion **adjacent to a scar**, with overlying vitreous cell

*The fact that active lesions are usually adjacent to an old scar indicates what about their origin?*
It indicates they represent reactivation of a previously dormant infection
Uveitis: **Toxoplasmosis**

**Toxoplasmosis: Retinochoroiditis**

What is the classic appearance of an inactive toxoplasmosis lesion? A pigmented chorioretinal scar

What is the classic appearance of an active toxoplasmosis lesion? A white lesion **not adjacent to a scar**, with overlying vitreous cell

The fact that active lesions are usually adjacent to an old scar indicates what about their origin? It indicates they represent reactivation of a previously dormant infection

What is indicated if an active is **not** adjacent to a scar?
Uveitis: **Toxoplasmosis**

**Toxoplasmosis: Retinochoroiditis**

What is the classic appearance of an inactive toxoplasmosis lesion?
A pigmented chorioretinal scar

What is the classic appearance of an **active** toxoplasmosis lesion?
A white lesion **not adjacent to a scar**, with overlying vitreous cell

*The fact that active lesions are usually adjacent to an old scar indicates what about their origin?*
It indicates they represent reactivation of a previously dormant infection

*What is indicated if an active is **not adjacent to a scar**?*
It indicates the dz is newly acquired
Uveitis: *Toxoplasmosis*

**Toxoplasmosis: Retinochoroiditis**

*What is the classic appearance of an inactive toxoplasmosis lesion?*
A pigmented chorioretinal scar

*What is the classic appearance of an active toxoplasmosis lesion?*
A white lesion adjacent to a scar, with overlying vitreous cell

*What is the classic description of the appearance of an active lesion?*
Uveitis: *Toxoplasmosis*

*Toxoplasmosis: Retinochoroiditis*

**What is the classic appearance of an inactive toxoplasmosis lesion?**
A pigmented chorioretinal scar

**What is the classic appearance of an active toxoplasmosis lesion?**
A white lesion adjacent to a scar, with overlying vitreous cell

**What is the classic description of the appearance of an active lesion?**
*‘Headlight in the fog’*
Uveitis: *Toxoplasmosis*

Active toxoplasmosis: Headlight in the fog
Uveitis: **Toxoplasmosis**

**Toxoplasmosis: Retinochoroiditis**

What is the classic appearance of an inactive toxoplasmosis lesion?
A pigmented chorioretinal scar

What is the classic appearance of an **active** toxoplasmosis lesion?
A white lesion adjacent to a scar, with overlying vitreous cell

What is the classic description of the appearance of an active lesion?
'Headlight in the fog'

**In terms of the Headlight in the fog appearance…**
**The headlight =**
**The fog =**
Uveitis: **Toxoplasmosis**

**Toxoplasmosis: Retinochoroiditis**

What is the classic appearance of an inactive toxoplasmosis lesion?
A pigmented chorioretinal scar

What is the classic appearance of an **active** toxoplasmosis lesion?
A white lesion adjacent to a scar, with overlying vitreous cell

What is the classic description of the appearance of an active lesion?
*In terms of the Headlight in the fog appearance…*

**The headlight = the white toxo lesion**

**The fog =**
Uveitis: **Toxoplasmosis**

**Toxoplasmosis: Retinochoroiditis**

*What is the classic appearance of an inactive toxoplasmosis lesion?*
A pigmented chorioretinal scar

*What is the classic appearance of an active toxoplasmosis lesion?*
A white lesion adjacent to a scar, with overlying vitreous cell

*What is the classic description of the appearance of an active lesion?*  
*In terms of the Headlight in the fog appearance…*

**The headlight** = the white toxo lesion  
**The fog** =
Uveitis: **Toxoplasmosis**

**Toxoplasmosis: Retinochoroiditis**

What is the classic appearance of an inactive toxoplasmosis lesion?
A pigmented chorioretinal scar

What is the classic appearance of an **active** toxoplasmosis lesion?
A white lesion adjacent to a scar, with overlying vitreous cell

*In terms of the Headlight in the fog appearance…*

*The headlight = the white toxo lesion*

*The fog = the dense overlying vitritis*
Uveitis: *Toxoplasmosis*

Toxoplasmosis: Retinochoroiditis

*What is the classic appearance of an inactive toxoplasmosis lesion?*
A pigmented chorioretinal scar

*What is the classic appearance of an active toxoplasmosis lesion?*
A white lesion adjacent to a scar, with overlying vitreous cell

*What is the classic description of the appearance of an active lesion?*
‘Headlight in the fog’

*What is the natural history of active toxo retinochoroiditis in immunocompetent pts?*
Uveitis: **Toxoplasmosis**

Toxoplasmosis: Retinochoroiditis

What is the classic appearance of an inactive toxoplasmosis lesion?
A pigmented chorioretinal scar

What is the classic appearance of an **active** toxoplasmosis lesion?
A white lesion adjacent to a scar, with overlying vitreous cell

What is the classic description of the appearance of an active lesion?
‘Headlight in the fog’

What is the natural history of active toxo retinochoroiditis in immunocompetent pts?
The news in this regard is mixed. In one sense it is a self-limited condition in that active lesions resolve spontaneously over a couple of months.
Uveitis: *Toxoplasmosis*

*Toxoplasmosis: Retinochoroiditis*

*What is the classic appearance of an inactive toxoplasmosis lesion?*
A pigmented chorioretinal scar

*What is the classic appearance of an active toxoplasmosis lesion?*
A white lesion adjacent to a scar, with overlying vitreous cell

*What is the classic description of the appearance of an active lesion?*
‘Headlight in the fog’

*What is the natural history of active toxo retinochoroiditis in immunocompetent pts?*
The news in this regard is mixed. In one sense it is a self-limited condition in that active lesions resolve spontaneously over a couple of months. However, it is also a chronic and progressive condition in that new lesions appear periodically adjacent or near to old scars.
Uveitis: **Toxoplasmosis**

**Diagnosis**

How is the diagnosis of ocular toxoplasmosis made?
How is the diagnosis of ocular toxoplasmosis made?
In most cases, clinically
Uveitis: **Toxoplasmosis**

**Diagnosis**

*How is the diagnosis of ocular toxoplasmosis made?*
In most cases, clinically

*Is serology testing helpful?*
Uveitis: *Toxoplasmosis*

**Diagnosis**

*How is the diagnosis of ocular toxoplasmosis made?*

In most cases, clinically

*Is serology testing helpful?*

It can be. As with most infectious conditions, toxo acquisition produces a transient (<1 yr) *IgM* response, and a lifelong *IgG* response. Thus, a positive *IgM* result confirms a recent infection.
Uveitis: **Toxoplasmosis**

*Diagnosis*

*How is the diagnosis of ocular toxoplasmosis made?*
In most cases, clinically

*Is serology testing helpful?*
It can be. As with most infectious conditions, toxo acquisition produces a transient (<1 yr) IgM response, and a lifelong IgG response. Thus, a positive IgM result confirms a recent infection.
Uveitis: **Toxoplasmosis**

*Diagnosis*

*How is the diagnosis of ocular toxoplasmosis made?*
In most cases, clinically

*Is serology testing helpful?*
It can be. As with most infectious conditions, toxo acquisition produces a transient (<1 yr) IgM response, and a lifelong IgG response. Thus, a positive IgM result confirms a recent infection. Because of the high prevalence of toxo exposure in the population at large, IgG positivity cannot be considered confirmatory vis a vis a pt who presents with retinochoroiditis. However, if the pt’s toxo serology is IgG(-), this result removes toxo from the DDx.
Uveitis: *Toxoplasmosis*

**Diagnosis**

*How is the diagnosis of ocular toxoplasmosis made?*
In most cases, clinically

*Is serology testing helpful?*
It can be. As with most infectious conditions, toxo acquisition produces a transient (<1 yr) IgM response, and a lifelong IgG response. Thus, a positive IgM result confirms a recent infection. Because of the high prevalence of toxo exposure in the population at large, IgG positivity cannot be considered confirmatory vis a vis a pt who presents with retinochoroiditis. However, if the pt’s toxo serology is IgG(-), this result removes toxo from the DDx.

*What about suspected congenital toxo—is serology helpful in these cases?*
**Diagnosis**

How is the diagnosis of ocular toxoplasmosis made?
In most cases, clinically

Is serology testing helpful?
It can be. As with most infectious conditions, toxo acquisition produces a transient (<1 yr) IgM response, and a lifelong IgG response. Thus, a positive IgM result confirms a recent infection. Because of the high prevalence of toxo exposure in the population at large, IgG positivity cannot be considered confirmatory vis a vis a pt who presents with retinochoroiditis. However, if the pt's toxo serology is IgG(-), this result removes toxo from the DDx.

What about suspected congenital toxo—is serology helpful in these cases?
Again, it can be. Maternal IgG antibodies will cross the placenta, so their presence in a newborn is noncontributory.
**Uveitis: Toxoplasmosis**

**Diagnosis**

*How is the diagnosis of ocular toxoplasmosis made?*

In most cases, clinically

*Is serology testing helpful?*

It can be. As with most infectious conditions, toxo acquisition produces a transient (<1 yr) IgM response, and a lifelong IgG response. Thus, a positive IgM result confirms a recent infection. Because of the high prevalence of toxo exposure in the population at large, IgG positivity cannot be considered confirmatory vis a vis a pt who presents with retinochoroiditis. However, if the pt’s toxo serology is IgG(-), this result removes toxo from the DDx.

*What about suspected congenital toxo—is serology helpful in these cases?*

Again, it can be. Maternal IgG antibodies will cross the placenta, so their presence in a newborn is noncontributory.
How is the diagnosis of ocular toxoplasmosis made?
In most cases, clinically

Is serology testing helpful?
It can be. As with most infectious conditions, toxo acquisition produces a transient (<1 yr) IgM response, and a lifelong IgG response. Thus, a positive IgM result confirms a recent infection. Because of the high prevalence of toxo exposure in the population at large, IgG positivity cannot be considered confirmatory vis a vis a pt who presents with retinochoroiditis. However, if the pt’s toxo serology is IgG(-), this result removes toxo from the DDx.

What about suspected congenital toxo— is serology helpful in these cases?
Again, it can be. Maternal IgG antibodies will cross the placenta, so their presence in a newborn is noncontributory. In contrast, IgM does not cross the placenta, so if a newborn is IgM(+), it is confirmatory of congenital infection.
Uveitis: *Toxoplasmosis*

**Treatment**

What are the indications for treating active ocular toxoplasmosis?
Uveitis: *Toxoplasmosis*

**Treatment**

*What are the indications for treating active ocular toxoplasmosis?*

This is controversial. Some physicians tx all lesions, whereas other elect to watch small peripheral ones. That said, the following clinical scenarios are considered relative indications to tx:

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Uveitis: *Toxoplasmosis*

**Treatment**

*What are the indications for treating active ocular toxoplasmosis?*

This is controversial. Some physicians tx all lesions, whereas other elect to watch small peripheral ones. That said, the following clinical scenarios are considered relative indications to tx:

-- Lesions in the [location] or threatening the [location]

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Uveitis: **Toxoplasmosis**

*Treatment*

*What are the indications for treating active ocular toxoplasmosis?*
This is controversial. Some physicians tx all lesions, whereas other elect to watch small peripheral ones. That said, **the following clinical scenarios are considered relative indications to tx:**
--Lesions in the fovea or threatening the ONH
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Uveitis: **Toxoplasmosis**

**Treatment**

*What are the indications for treating active ocular toxoplasmosis?*
This is controversial. Some physicians tx all lesions, whereas other elect to watch small peripheral ones. That said, the following clinical scenarios are considered relative indications to tx:
-- Lesions in the fovea or threatening the ONH
-- Lesions associated with decreased

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What are the indications for treating active ocular toxoplasmosis? This is controversial. Some physicians tx all lesions, whereas other elect to watch small peripheral ones. That said, the following clinical scenarios are considered relative indications to tx:

--Lesions in the fovea or threatening the ONH
--Lesions associated with decreased VA
Uveitis: **Toxoplasmosis**

**Treatment**

*What are the indications for treating active ocular toxoplasmosis?*

This is controversial. Some physicians tx all lesions, whereas other elect to watch small peripheral ones. That said, the following clinical scenarios are considered relative indications to tx:

--Lesions in the fovea or threatening the ONH
--Lesions associated with decreased VA
-- or lesions
--
--
What are the indications for treating active ocular toxoplasmosis?
This is controversial. Some physicians tx all lesions, whereas other elect to watch small peripheral ones. That said, the following clinical scenarios are considered relative indications to tx:
--Lesions in the fovea or threatening the ONH
--Lesions associated with decreased VA
--Large or multifocal lesions

What are the indications for treating active ocular toxoplasmosis? This is controversial. Some physicians tx all lesions, whereas other elect to watch small peripheral ones. That said, the following clinical scenarios are considered relative indications to tx:

--Lesions in the fovea or threatening the ONH
--Lesions associated with decreased VA
--Large or multifocal lesions
--A lesion that remains active for an amount of time
Uveitis: **Toxoplasmosis**

**Treatment**

*What are the indications for treating active ocular toxoplasmosis?*

This is controversial. Some physicians tx all lesions, whereas other elect to watch small peripheral ones. That said, the following clinical scenarios are considered relative indications to tx:

--Lesions in the fovea or threatening the ONH
--Lesions associated with decreased VA
--Large or multifocal lesions
--A lesion that remains active for >1 month

--
Uveitis: *Toxoplasmosis*

**Treatment**

*What are the indications for treating active ocular toxoplasmosis?*

This is controversial. Some physicians tx all lesions, whereas other elect to watch small peripheral ones. That said, the following clinical scenarios are considered relative indications to tx:

--Lesions in the fovea or threatening the ONH
--Lesions associated with decreased VA
--Large or multifocal lesions
--A lesion that remains active for >1 month
--Lesions associated with significant exam finding (two words)
What are the indications for treating active ocular toxoplasmosis? This is controversial. Some physicians tx all lesions, whereas other elect to watch small peripheral ones. That said, the following clinical scenarios are considered relative indications to tx:

--Lesions in the fovea or threatening the ONH
--Lesions associated with decreased VA
--Large or multifocal lesions
--A lesion that remains active for >1 month
--Lesions associated with significant vitreous inflammation
Uveitis: *Toxoplasmosis*

**Treatment**

What are the indications for treating active ocular toxoplasmosis?

This is controversial. Some physicians tx all lesions, whereas other elect to watch small peripheral ones. That said, the following clinical scenarios are considered relative indications to tx:

--Lesions in the fovea or threatening the ONH
--Lesions associated with decreased VA
--Large or multifocal lesions
--A lesion that remains active for >1 month
--Lesions associated with significant vitreous inflammation

And most physicians consider the following clinical scenarios absolute indications to tx:

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Uveitis: **Toxoplasmosis**

**Treatment**

What are the indications for treating active ocular toxoplasmosis? This is controversial. Some physicians tx all lesions, whereas other elect to watch small peripheral ones. That said, the following clinical scenarios are considered relative indications to tx:

--Lesions in the fovea or threatening the ONH
--Lesions associated with decreased VA
--Large or multifocal lesions
--A lesion that remains active for >1 month
--Lesions associated with significant vitreous inflammation

And most physicians consider the following clinical scenarios **absolute** indications to tx:

--If the pt is **general medical condition**
**Uveitis: Toxoplasmosis**

**Treatment**

*What are the indications for treating active ocular toxoplasmosis?*

This is controversial. Some physicians tx all lesions, whereas other elect to watch small peripheral ones. That said, the following clinical scenarios are considered relative indications to tx:

--Lesions in the fovea or threatening the ONH
--Lesions associated with decreased VA
--Large or multifocal lesions
--A lesion that remains active for >1 month
--Lesions associated with significant vitreous inflammation

And most physicians consider the following clinical scenarios **absolute** indications to tx:

--If the pt is immunocompromised
--
Uveitis: **Toxoplasmososis**

**Treatment**

*What are the indications for treating active ocular toxoplasmosis?*

This is controversial. Some physicians tx all lesions, whereas other elect to watch small peripheral ones. That said, the following clinical scenarios are considered relative indications to tx:

--Lesions in the fovea or threatening the ONH  
--Lesions associated with decreased VA  
--Large or multifocal lesions  
--A lesion that remains active for >1 month  
--Lesions associated with significant vitreous inflammation  

And most physicians consider the following clinical scenarios *absolute* indications to tx:

--If the pt is immunocompromised  
--If the pt is *, and has newly-acquired dz
What are the indications for treating active ocular toxoplasmosis?
This is controversial. Some physicians tx all lesions, whereas other elect to watch small peripheral ones. That said, the following clinical scenarios are considered relative indications to tx:
--Lesions in the fovea or threatening the ONH
--Lesions associated with decreased VA
--Large or multifocal lesions
--A lesion that remains active for >1 month
--Lesions associated with significant vitreous inflammation
And most physicians consider the following clinical scenarios absolute indications to tx:
--If the pt is immunocompromised
--If the pt is pregnant, and has newly-acquired dz
Uveitis: *Toxoplasmosis*

**Treatment**

*What are the indications for treating active ocular toxoplasmosis?*
This is controversial. Some physicians tx all lesions, whereas other elect to watch small peripheral ones. That said, the following clinical scenarios are considered relative indications to tx:

--Lesions in the fovea or threatening the ONH
--Lesions associated with decreased VA
--Large or multifocal lesions
--A lesion that remains active for >1 month
--Lesions associated with significant vitreous inflammation

And most physicians consider the following clinical scenarios **absolute** indications to tx:

--If the pt is immunocompromised
--If the pt is pregnant, and has newly-acquired dz

*How is ocular toxo treated?*
Uveitis: *Toxoplasmosis*

**Treatment**

*What are the indications for treating active ocular toxoplasmosis?*

This is controversial. Some physicians tx all lesions, whereas other elect to watch small peripheral ones. That said, the following clinical scenarios are considered relative indications to tx:

--Lesions in the fovea or threatening the ONH
--Lesions associated with decreased VA
--Large or multifocal lesions
--A lesion that remains active for >1 month
--Lesions associated with significant vitreous inflammation

And most physicians consider the following clinical scenarios **absolute** indications to tx:

--If the pt is immunocompromised
--If the pt is pregnant, and has newly-acquired dz

*How is ocular toxo treated?*

Multiple regimens have been developed:

--So-called ‘triple therapy’ consists of [pyrimethamine] + [sulfadiazine] + [steroids]
What are the indications for treating active ocular toxoplasmosis?

This is controversial. Some physicians treat all lesions, whereas others elect to watch small peripheral ones. That said, the following clinical scenarios are considered relative indications to tx:

--Lesions in the fovea or threatening the ONH
--Lesions associated with decreased VA
--Large or multifocal lesions
--A lesion that remains active for >1 month
--Lesions associated with significant vitreous inflammation

And most physicians consider the following clinical scenarios absolute indications to tx:

--If the pt is immunocompromised
--If the pt is pregnant, and has newly-acquired dz

How is ocular toxo treated?

Multiple regimens have been developed:

--So-called ‘triple therapy’ consists of pyrimethamine + sulfadiazine + steroids
Treatment

What are the indications for treating active ocular toxoplasmosis?
This is controversial. Some physicians tx all lesions, whereas other elect to watch small peripheral ones. That said, the following clinical scenarios are considered relative indications to tx:
--Lesions in the fovea or threatening the ONH
--Lesions associated with decreased VA
--Large or multifocal lesions
--A lesion that remains unchanged for >2 months
--Lesions associated with significant vitreous inflammation
And most physicians consider the following clinical scenarios absolute indications to tx:
--If the pt is immunocompromised
--If the pt is pregnant, and has newly-acquired dz

How is ocular toxo treated?
Multiple regimens have been developed:
--So-called ‘triple therapy’ consists of pyrimethamine + sulfadiazine + steroids

Pyrimethamine and sulfadiazine inhibit the metabolism of what vitamin?

Folate

What critical hematopoietic issues can arise if folate metabolism is inhibited?
Leukopenia and thrombocytopenia

In order to prevent pyrimethamine/sulfadiazine-induced leukopenia and thrombocytopenia, what med is given along with triple therapy?
Folinic acid (aka leucovorin).
In addition, pts treated with triple therapy should have their blood count checked weekly.
Uveitis: **Toxoplasmosis**

**Treatment**

What are the indications for treating active ocular toxoplasmosis?

This is controversial. Some physicians tx all lesions, whereas other elect to watch small peripheral ones. That said, the following clinical scenarios are considered relative indications to tx:

--Lesions in the fovea or threatening the ONH
--Lesions associated with decreased VA
--Large or multifocal lesions
--A lesion that remains unchanging for three or more months
--Lesions associated with significant vitreous inflammation

And most physicians consider the following clinical scenarios absolute indications to tx:

--If the pt is immunocompromised
--If the pt is pregnant, and has newly-acquired dz

How is ocular toxo treated?

Multiple regimens have been developed:

--So-called ‘triple therapy’ consists of **pyrimethamine + sulfadiazine + steroids**

**Pyrimethamine and sulfadiazine inhibit the metabolism of what vitamin?**

Folate
What are the indications for treating active ocular toxoplasmosis? This is controversial. Some physicians tx all lesions, whereas other elect to watch small peripheral ones. That said, the following clinical scenarios are considered relative indications to tx:

- Lesions in the fovea or threatening the ONH
- Lesions associated with decreased VA
- Large or multifocal lesions associated with significant vitreous inflammation

And most physicians consider the following clinical scenarios absolute indications to tx:

- If the pt is immunocompromised
- If the pt is pregnant, and has newly-acquired dz

How is ocular toxo treated?

Multiple regimens have been developed:

- So-called ‘triple therapy’ consists of **pyrimethamine + sulfadiazine + steroids**

What are the indications for treating active ocular toxoplasmosis?

This is controversial. Some physicians tx all lesions, whereas other elect to watch small peripheral ones. That said, the following clinical scenarios are considered relative indications to tx:

- Lesions in the fovea or threatening the ONH
- Lesions associated with decreased VA
- Large or multifocal lesions associated with significant vitreous inflammation

And most physicians consider the following clinical scenarios absolute indications to tx:

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Uveitis: **Toxoplasmosis**

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**Pyrimethamine and sulfadiazine inhibit the metabolism of what vitamin?**
Folate

**What critical hematopoietic issues can arise if folate metabolism is inhibited?**
Leukopenia and thrombocytopenia
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- A lesion that remains after the first-line therapy
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*In order to prevent pyrimethamine/sulfadiazine-induced leukopenia and thrombocytopenia, what med is given along with triple therapy?*
Folinic acid (aka leucovorin). In addition, pts treated with triple therapy should have their blood count checked weekly.
**Uveitis: Toxoplasmosis**

### Treatment

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In terms of route, are steroids given…
--Systemically?
**Uveitis: Toxoplasmosis**

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--Topically? Sure, especially if anterior segment inflammation is present
--Periocular-depot?
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**In terms of route, are steroids given…**

--**Systemically**? Yes, so long as anti-microbial tx is on-board
--**Topically**? Sure, especially if anterior segment inflammation is present
--**Periocular-depot**? **No!** This route can lead to uncontrollable inflammation and loss of the eye
Uveitis: *Toxoplasmosis*

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**Uveitis: Toxoplasmosis**

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*What is the dreaded potential side effect of clinda?*
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What is the dreaded potential side effect of clinda? Pseudomembranous colitis
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--\(\text{pyrimethamine is effective as well}\)
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Which is the most effective tx regimen for ocular toxoplasmosis?
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**Which is the most effective tx regimen for ocular toxoplasmosis?**
None of the above. That is, while all are employed, none has been shown via clinical trial to be definitively the best.
Uveitis: **Toxoplasmosis**

**Toxoplasmosis: Congenital**

A woman with a hx of toxoplasmosis becomes pregnant. What is the risk of fetal infection?
Uveitis: **Toxoplasmosis**

**Toxoplasmosis: Congenital**

A woman with a hx of toxoplasmosis becomes pregnant. What is the risk of fetal infection? Zero, zilch, nada. Transplacental transmission occurs only if/when a pregnant woman is infected.
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**Toxoplasmosis: Congenital**

A woman with a hx of toxoplasmosis becomes pregnant. *What is the risk of fetal infection?* Zero, zilch, nada. Transplacental transmission occurs only if/when a pregnant woman is infected.

*What is the risk if she has a recurrence during her pregnancy?*
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*OK, but what if she's harboring tissue cysts—what's the risk then?*
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OK, but what if she's harboring tissue cysts—what's the risk then?
Well, if she has a hx of toxoplasmosis, there’s no ‘what if’—she’s **definitely** harboring tissue cysts. That said, the risk of fetal transmission is still zero.
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How might a pregnant woman become primarily infected?
Uveitis: Toxoplasmosis

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How might a pregnant woman become primarily infected? By any of the pathways described earlier—by consuming foodstuffs containing viable tissue cysts, consuming oocysts, or (very rarely) by blood-to-blood transmission of tachyzoites
Uveitis: **Toxoplasmosis**

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*How should a pregnant woman go about minimizing her risk of becoming infected?* 
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How should a pregnant woman go about minimizing her risk of becoming infected?
--Don’t consume or
--Don’t handle litter boxes (or cats, especially kittens)
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How should a pregnant woman go about minimizing her risk of becoming infected?
--Don’t consume undercooked meat or unpasteurized goat’s milk
--Don’t handle litter boxes (or cats, especially kittens)
Uveitis: *Toxoplasmosis*

*Toxoplasmosis: Congenital*

What is the classic ocular manifestation of congenital toxoplasmosis?
Uveitis: **Toxoplasmosis**

**Toxoplasmosis: Congenital**

*What is the classic ocular manifestation of congenital toxoplasmosis?*

The same as in the acquired version—a retinochoroiditis (either active, or a scar)
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*Where in the retina are congenital lesions usually found?*
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*Does congenital toxo present unilaterally, or bilaterally?*
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*Where in the retina are congenital lesions usually found?*
The macula

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Bilaterally in the majority of cases
**Uveitis: Toxoplasmosis**

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*What is the classic ocular manifestation of congenital toxoplasmosis?*
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What are the systemic manifestations?
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They are protean, but include intracranial calcifications, hydrocephalus, and developmental issues
Uveitis: *Toxoplasmosis*

- Hydrocephalus
- Intracranial calcifications

Congenital toxoplasmosis
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*Are such infants in the clear?*

Unfortunately not. Almost all of these ‘unaffected’ infants will experience a retinochoroiditis event in one or both eyes at some point in childhood, and up to 25% will be blinded by it.
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**Note:** This is per the *Uveitis* book; the *Peds* book states “Ocular toxo does not require treatment unless it threatens vision.” Caveat emptor.
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Toxoplasmosis is not the only infectious agent that presents in this manner when acquired in utero.
What is the well-known mnemonic for the infectious agents?
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Toxoplasmosis is not the only infectious agent that presents in this manner when acquired in utero. What is the well-known mnemonic for the infectious agents? What does each letter stand for? 

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--Toxoplasmosis (duh)
--Other
--Rubella
--CMV
--Herpesviruses, including
--EBV
--Syphilis
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The Peds book uses the mnemonic TORCH:
--TOxoplasmosis
--Rubella
--CMV
--Herpesviruses
Is toxoplasmosis a common opportunistic infection in HIV/AIDS pts?
Uveitis: *Toxoplasmosis*  

*In HIV+ pts*

Is toxoplasmosis a common opportunistic infection in HIV/AIDS pts?  
Not particularly, no
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*In what key way might the presentation of toxo retinitis in an HIV+ pt deviate from the classic *headlight in the fog* description?
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In what key way might the presentation of toxo retinitis in an HIV+ pt deviate from the classic *headlight in the fog* description?
By the absence or attenuation of the ‘fog’ aspect—a pt who is profoundly immunocompromised might not be able to generate a significant vitritis
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Uveitis: *Toxoplasmosis*

Toxoplasmosis in AIDS. Note 1) multifocality, and 2) the absence of old scars
Uveitis: Toxoplasmosis

In HIV+ pts

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Why must all toxo retinochoroiditis be treated in HIV/AIDS pts?
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*Why must all toxo retinochoroiditis be treated in HIV/AIDS pts?*
Because unlike in immunocompetent pts, dz in HIV/AIDS pts does **not** resolve spontaneously—instead, it is relentlessly progressive
Is toxoplasmosis a common opportunistic infection in HIV/AIDS pts? Not particularly, no.

In what key way might the presentation of toxo retinitis in an HIV+ pt deviate from the classic "headlight in the fog" description? By the absence or attenuation of the 'fog' aspect—a pt who is profoundly immunocompromised might not be able to generate a significant vitritis.

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Why do immunocompromised pts with toxo retinitis need brain imaging?
To assess for CNS involvement

Is there a strong correlation between ocular and CNS toxo in HIV+ pts?
Yes—up to 50% of toxo retinitis pts will be found to have CNS involvement

What is the classic neuroimaging finding?
'Ring-enhancing lesions'
Uveitis: **Toxoplasmosis**

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In what key way might the presentation of toxo retinitis in an HIV+ pt deviate from the classic **headlight in the fog** description?
By the absence or attenuation of the ‘fog’ aspect—a pt who is profoundly immunocompromised might not be able to generate a significant vitritis

Toxo retinochoroiditis presentation in HIV/AIDS pts differs in several other respects as well. What are they?
--The dz may be multifocal (ie, >1 active lesion present)
--The lesion(s) tend to be s/w larger than in immunocompetent pts
--The lesion is much more likely to be de novo, ie, to not be associated with an old CR scar

In what ways does the management of toxo retinitis differ in the immunocompromised population?
--Whereas in immunocompetent pts, toxo retinitis needs treatment only if the lesion is threatening the macula, ONH or a major vessel, or in cases of severe vitritis, in immunocompromised pts, lesions are treated regardless of location or severity or HIV load
--In immunocompetent pts, toxo retinitis does not prompt imaging; whereas in immunocompromised pts, a finding of toxo retinitis should prompt MR imaging of the brain

Why do immunocompromised pts with toxo retinitis need brain imaging?
To assess for CNS involvement

Is there a strong correlation between ocular and CNS toxo in HIV+ pts?
Yes—up to 50% of toxo retinitis pts will be found to have CNS involvement

What is the classic neuroimaging finding?
MR imaging of the brain
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

Is toxoplasmosis a common opportunistic infection in HIV/AIDS pts?
Not particularly, no

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What is the classic neuroimaging finding?
‘Ring-enhancing lesions’
Uveitis: *Toxoplasmosis*

CNS toxo: Ring-enhancing lesions
The following slides were part of an earlier version of the toxo review slide-set. There’s no new info in them, but as they take a different approach to the subject, it might be worth your time to go through them.
Where does toxoplasmosis rank as a cause of posterior segment infection?
Where does toxoplasmosis rank as a cause of posterior segment infection? #1
Where does toxoplasmosis rank as a cause of posterior segment infection?

In the US, what is the prevalence for toxoplasmosis infection?

20-25% of Americans who are infected.

Only 2%

What country has the highest toxoplasmosis prevalence rate?

Brazil, at about 85% (France is really high as well)

What percentage of infected Brazilians have ocular dz?

About 20%
Where does toxoplasmosis rank as a cause of posterior segment infection? #1

In the US, what is the prevalence for toxoplasmosis infection? 20-25%

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About 20% of infected Brazilians have ocular disease.
Where does toxoplasmosis rank as a cause of posterior segment infection? #1

In the US, what is the prevalence for toxoplasmosis infection? 20-25%

Of Americans who are infected, what percent have ocular dz?
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Is ocular toxoplasmosis known to present with anterior segment signs?
Where does toxoplasmosis rank as a cause of posterior segment infection? #1

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Where does toxoplasmosis rank as a cause of posterior segment infection?

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When the anterior segment is involved, what appearance is typical for the KP?
They are typically granulomatous in appearance. However, toxoplasmosis is known to produce 'stellate' KP as well.
Where does toxoplasmosis rank as a cause of posterior segment infection?

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Which four uveitides are associated with stellate KP?

--
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Which four uveitides are associated with stellate KP?
- FHI
- HSV
- VZV
- Toxoplasmosis
Where does toxoplasmosis rank as a cause of posterior segment infection? #1

Classic description of the posterior pole exam in toxoplasmosis: four words
Where does toxoplasmosis rank as a cause of posterior segment infection? #1

Classic description of the posterior pole exam in toxoplasmosis: ‘Headlight in the fog’
Where does toxoplasmosis rank as a cause of posterior segment infection?

Classic description of the posterior pole exam in toxoplasmosis: ‘Headlight in the fog’

_in terms of the Headlight in the fog appearance…_

The headlight =
The fog =
- Where does toxoplasmosis rank as a cause of posterior segment infection? #1
- Classic description of the posterior pole exam in toxoplasmosis: ‘Headlight in the fog’

*In terms of the Headlight in the fog appearance…*
The headlight = the white toxo lesion
The fog = the dense overlying vitritis
Where does toxoplasmosis rank as a cause of posterior segment infection? #1

Classic description of the posterior pole exam in toxoplasmosis: ‘Headlight in the fog’

The toxo organism is an obligate vs facultative.
Where does toxoplasmosis rank as a cause of posterior segment infection? #1

Classic description of the posterior pole exam in toxoplasmosis: ‘Headlight in the fog’

The toxo organism is an obligate intra- vs extracellular
Where does toxoplasmosis rank as a cause of posterior segment infection? #1

Classic description of the posterior pole exam in toxoplasmosis: ‘Headlight in the fog’

The toxo organism is an obligate intracellular bug-host relationship
Where does toxoplasmosis rank as a cause of posterior segment infection? #1

Classic description of the posterior pole exam in toxoplasmosis: ‘Headlight in the fog’

The toxo organism is an obligate intracellular parasitic class of bug.
Where does toxoplasmosis rank as a cause of posterior segment infection? #1

Classic description of the posterior pole exam in toxoplasmosis: ‘Headlight in the fog’

The toxo organism is an obligate intracellular parasitic protozoan
Where does toxoplasmosis rank as a cause of posterior segment infection? #1

Classic description of the posterior pole exam in toxoplasmosis: ‘Headlight in the fog’

The toxo organism is an obligate intracellular parasitic protozoan

What is the full name of the organism?

Toxoplasma gondii

Are humans the so-called 'definitive host' for toxoplasma?
No; humans are an intermediate host

What animal is the definitive host?
The cat
Where does toxoplasmosis rank as a cause of posterior segment infection? #1

Classic description of the posterior pole exam in toxoplasmosis: ‘Headlight in the fog’

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Can represent re-activation of disease, or newly-acquired infection
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- Can represent re-activation of congenital disease, or newly-acquired infection

It had long been thought that virtually all cases of ocular toxo represented reactivation of congenital disease. However, recent research indicates a sizeable proportion of cases are acquired post-natally, with many experts now convinced that the majority of cases are acquired in this fashion.
Where does toxoplasmosis rank as a cause of posterior segment infection? #1

Classic description of the posterior pole exam in toxoplasmosis: 'Headlight in the fog'

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What is the typical DFE finding in congenital toxoplasmosis?
Where does toxoplasmosis rank as a cause of posterior segment infection?

Classic description of the posterior pole exam in toxoplasmosis: 'Headlight in the fog'.

The toxo organism is an obligate intracellular parasitic protozoan.

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What is the typical DFE finding in congenital toxoplasmosis?
A chorioretinal scar.
Toxoplasmosis

- Where does toxoplasmosis rank as a cause of posterior segment infection?
- Classic description of the posterior pole exam in toxoplasmosis: 'Headlight in the fog'
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Q

- What is the typical DFE finding in congenital toxoplasmosis?
  - A chorioretinal scar
- Where in the retina is the C-R scar usually found?

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Where does toxoplasmosis rank as a cause of posterior segment infection? #1

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Where in the retina is the C-R scar usually found?
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Where in the retina is the C-R scar usually found?
The macula

Are the lesion usually unilateral, or bilateral?
Toxoplasmosis

- Where does toxoplasmosis rank as a cause of posterior segment infection?

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They are bilateral in the majority of cases
Where does toxoplasmosis rank as a cause of posterior segment infection? #1

Classic description of the posterior pole exam in toxoplasmosis: ‘Headlight in the fog’

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Can represent re-activation of congenital disease, or newly-acquired infection

What is the principal means by which newly-acquired toxoplasmosis is transmitted?
Where does toxoplasmosis rank as a cause of posterior segment infection? #1

Classic description of the posterior pole exam in toxoplasmosis: ‘Headlight in the fog’

The toxo organism is an obligate intracellular parasitic protozoan

Can represent re-activation of congenital disease, or newly-acquired infection

What is the principal means by which newly-acquired toxoplasmosis is transmitted? Via ingestion of the infectious cysts in:

-- Undercooked meat; or in
-- Contaminated fruits/veggies; or in
-- Unpasteurized goat’s milk
Where does toxoplasmosis rank as a cause of posterior segment infection? 

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Of AIDS patients with ocular toxo will have lesions
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1/3 of AIDS patients with ocular toxo will have CNS lesions--they must undergo MRI (classic finding—ring-enhancing lesions)
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Treatment of ocular toxoplasmosis:

- Treat active infection if threatening the...

<table>
<thead>
<tr>
<th>Structure/Area 1</th>
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<td>Structure/Area 2</td>
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  - ONH
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What is the natural course of untreated ocular toxoplasmosis?
Treatment of ocular toxoplasmosis:

- Treat active infection if threatening the...
  - macula
  - ONH
  - major retinal vessels
- ...or in cases of severe vitritis

What is the natural course of untreated ocular toxoplasmosis?
It is a self-limited disease in the immunocompetent--lesions will begin healing within a month or two
Treatment of ocular toxoplasmosis:
- Treat active infection if threatening the...
  - macula
  - ONH
  - major retinal vessels
- ...or in cases of severe vitritis
- Treat with
  1) antibiotic
  2) anti-malarial, actually
  3)
Treatment of ocular toxoplasmosis:

- Treat active infection if threatening the...  
  - macula  
  - ONH  
  - major retinal vessels  
- ...or in cases of severe vitritis  
- Treat with  
  1) Sulfadiazine  
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  - ONH
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- Treat with
  1) Sulfadiazine
  2) Pyrimethamine

(administration schedule)
Give a then until resolved (usually takes time)
Treatment of ocular toxoplasmosis:
- Treat active infection if threatening the...
  - macula
  - ONH
  - major retinal vessels
- ...or in cases of severe vitritis
- Treat with
  1) Sulfadiazine
  2) Pyrimethamine

Give a loading dose, then qd until resolved (usually takes 4-6 weeks)
Treatment of ocular toxoplasmosis:

- Treat active infection if threatening the macula, ONH, major retinal vessels, or in cases of severe vitritis.

Treat with:

1) Sulfadiazine
   - Give a loading dose, then qd until resolved (usually takes 4-6 weeks)

2) Pyrimethamine

Side effect: serious, systemic
Toxoplasmosis

Treatment of ocular toxoplasmosis:

- Treat active infection if threatening the...
  - macula
  - ONH
  - major retinal vessels
- …or in cases of severe vitritis
- Treat with
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     Side effect: Bone-marrow suppression
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  1) Sulfadiazine
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Side effect: Bone-marrow suppression; to prevent, give...
Treatment of ocular toxoplasmosis:
- Treat active infection if threatening the...
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- Treat with
  1) Sulfadiazine  
      (administration schedule)
      Give a loading dose, then qd until resolved (usually takes 4-6 weeks)
  2) Pyrimethamine
      Side effect: Bone-marrow suppression; to prevent, give...
  3) Folinic acid
Treatment of ocular toxoplasmosis:

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  1) Sulfadiazine
  2) Pyrimethamine
     Side effect: Bone-marrow suppression; to prevent, give...
  3) Folinic acid
     (administration schedule)
     Give a loading dose, then qd until resolved (usually takes 4-6 weeks)
  3) Steroids
     Not a typo!
Treatment of ocular toxoplasmosis:

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  2) Pyrimethamine
     Side effect: Bone-marrow suppression; to prevent, give...
  3) Folinic acid
  3) Prednisone

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  3) Folinic acid
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Side effect: Bone-marrow suppression; to prevent, give...

With respect to treating ocular toxoplasmosis, this combo of meds is known as the classic...what?
Treatment of ocular toxoplasmosis:
- Treat active infection if threatening the...
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With respect to treating ocular toxoplasmosis, this combo of meds is known as the classic...what?
‘Triple therapy’
Treatment of ocular toxoplasmosis:
- Treat active infection if threatening the...
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- ...or in cases of severe vitritis
- Treat with
  1) Sulfadiazine
  2) Pyrimethamine
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  3) Prednisone

Side effect: Bone-marrow suppression; to prevent, give...

Are alternative therapies available?

Yes, the following have been found to be efficacious alternatives:
- Trimethoprim-sulfamethoxazole
- Azithromycin
- Clindamycin

Do HIV/AIDS pts require long-term suppressive therapy?
Yes
Treatment of ocular toxoplasmosis:
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Yes
**Toxoplasmosis**

**Does treatment eradicate the infection?**

No

Why not? Is the toxo bug not susceptible?

The active bug (the tachyzoite) is quite susceptible. However, the bradyzoite form (aka tissue cyst) is impervious to the anti-infectives; thus, the infection is incurable.

**Does treatment prevent recurrences?**

No

What is the purpose of anti-infective treatment, then?

Practically speaking, the purpose of treatment is to allow for the administration of steroids (to reduce inflammation) without fear of exacerbating the infection itself.

**Treat with**

1) Sulfadiazine
2) Pyrimethamine
   - Side effect: Bone-marrow suppression
3) Folinic acid
3) Prednisone

(administration schedule)

Are alternative therapies available?

Yes, the following have been found to be efficacious alternatives:

--Trimethoprim-sulfamethoxazole
--Azithromycin
--Clindamycin

Do HIV/AIDS pts require long-term suppressive therapy?

Yes
Treatment of ocular toxoplasmosis:
- Treat active infection if threatening the macula, ONH, major retinal vessels, or in cases of severe vitritis.
- Treat with:
  1) Sulfadiazine
  2) Pyrimethamine
  3) Folinic acid
  4) Prednisone

Side effect: Bone-marrow suppression; to prevent, give Folinic acid.
Give a loading dose, then qd until resolved (usually takes 4-6 weeks).

Are alternative therapies available? Yes, the following have been found to be efficacious alternatives:
-- Trimethoprim-sulfamethoxazole
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Do HIV/AIDS pts require long-term suppressive therapy? Yes

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**Treatment of ocular toxoplasmosis:**

- Treat active infection if threatening the macula, ONH, or major retinal vessels or in cases of severe vitritis.
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  1. Sulfadiazine
  2. Pyrimethamine
  3. Folinic acid
  4. Prednisone

  (administration schedule)

  - Give a loading dose, then qd until resolved (usually takes 4-6 weeks)

**Are alternative therapies available?**

Yes, the following have been found to be efficacious alternatives:

- Trimethoprim-sulfamethoxazole
- Azithromycin
- Clindamycin

**Do HIV/AIDS pts require long-term suppressive therapy?**

Yes

**Does treatment eradicate the infection?**

No

**Why not? Is the toxo bug not susceptible?**

The active bug (the tachyzoite) is quite susceptible. However, the bradyzoite form (aka tissue cyst) is impervious to the anti-infectives; thus, the infection is incurable.

**Does treatment prevent recurrences?**

No

**What is the purpose of anti-infective treatment, then?**

Practically speaking, the purpose of treatment is to allow for the administration of steroids (to reduce inflammation) without fear of exacerbating the infection itself.
**Toxoplasmosis**

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**Treat with**

1. **Sulfadiazine**
2. **Pyrimethamine**
3. **Folinic acid**
4. **Prednisone**

Side effect: Bone-marrow suppression

(Administration schedule)

---

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**Treat with**

1) **Sulfadiazine**
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Toxoplasmosis

Treatment of ocular toxoplasmosis:
- Treat active infection if threatening the macula, ONH, major retinal vessels or in cases of severe vitritis
- Treat with:
  1) Sulfadiazine
  2) Pyrimethamine
  3) Folinic acid
  3) Prednisone

Side effect: Bone-marrow suppression; to prevent, give Folinic acid

Give a loading dose, then qd until resolved (usually takes 4-6 weeks)

Are alternative therapies available?
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--Trimethoprim-sulfamethoxazole
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- Treat active infection if threatening the macula, ONH, major retinal vessels, or in cases of severe vitritis.
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  3) Folinic acid
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2. **Folinic acid**
3. **Prednisone**

   The **triple therapy includes prednisone. Is it appropriate to use peri- or intraocular steroids instead?**

3. **Prednisone**

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1) **Sulfadiazine**

2) **Pyrimethamine**

3) **Folinic acid**

3) **Prednisone**

(Administration schedule)

Are alternative therapies available?  
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-- Clindamycin

Do HIV/AIDS pts require long-term suppressive therapy?  
Yes

The triple therapy includes prednisone. Is it appropriate to use peri- or intraocular steroids instead?  
No! Peri/intraocular steroids can result in inflammation so severe as to cause loss of the eye!
**Toxoplasmosis**

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**Does treatment prevent recurrences?**
No

*When recurrence occurs, what relationship usually holds between the new lesion and the original one?*
Practically speaking, the purpose of treatment is to allow for the administration of steroids (to reduce inflammation) without fear of exacerbating the infection itself.

**Treat with**

1. **Sulfadiazine**
   - Give a loading dose, then qd until resolved (usually takes 4-6 weeks)
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   - Side effect: Bone-marrow suppression
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Treatment of ocular toxoplasmosis:

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Does treatment prevent recurrences?
No

When recurrence occurs, what relationship usually holds between the new lesion and the original one?
The recurrence will occur at the border of the original lesion (which is now a scar).

Practically speaking, the purpose of treatment is to allow for the administration of steroids (to reduce inflammation) without fear of exacerbating the infection itself.
What is the most common manifestation of congenital toxoplasmosis?

Retinochoroiditis

What mnemonic covers the differential for a congenital presentation such as this?

TORCHES

Where does toxoplasmosis rank as a cause of posterior segment infection? #1

Classic description of the posterior pole exam in toxoplasmosis: ‘Headlight in the fog’

The toxo organism is an obligate intracellular parasitic protozoan

Can represent re-activation of congenital disease, or newly-acquired infection

What does TORCHES stand for?

Toxoplasmosis

What is the most common manifestation of toxoplasmosis?

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Can represent re-activation of congenital disease, or newly-acquired infection

What does TORCHES stand for?
- Toxoplasmosis
- Other agents
- Rubella
- CMV
- Herpes, including
- EBV
- Syphilis

What is the most common manifestation of congenital toxoplasmosis?
- Retinochoroiditis