Uveitis: **Sarcoid**

**Sarcoid: Overview**

*In broadest terms, how would you describe sarcoid?*
Uveitis: **Sarcoid**

**Sarcoid: Overview**

*In broadest terms, how would you describe sarcoid?*

It is a multi-organ disease characterized by the presence of noncaseating granulomas histology.
Uveitis: **Sarcoid**

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What is the cause?
Uveitis: **Sarcoid**

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As of this writing, it is unknown
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What organ/system is most commonly involved in sarcoid?
The lungs. So when meshing, look for a c/o SOB/DOE.
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*What is the single-best screening test for sarcoid?*
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What is the classic CXR finding?
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What is the single-best screening test for sarcoid?
Chest X-ray

What is the classic CXR finding?
Bilateral hilar adenopathy
Sarcoid: Bilateral hilar adenopathy
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A pt presents with acute-onset sarcoidosis manifesting with fever, arthralgias, erythema nodosum, hilar adenopathy and acute iritis. What is the eponymous name for this condition?
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Löfgren syndrome.
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**Heerfordt syndrome**
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1) The uveitis is profiled
2) The profiled case is meshed
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4) Studies are obtained to identify the etiology
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A pt presents with acute-onset sarcoidosis manifesting with fever, uveitis, parotitis and facial palsy. What on earth do these have to do with each other? A lot, actually. Recall that, upon exiting the skull, the facial nerve dives into the parotid gland before branching. Thus, it is not surprising that inflammation of the parotid gland could produce facial nerve palsy.

A pt presents with acute-onset sarcoidosis manifesting with fever, uveitis, parotitis and facial palsy. What is the eponymous name for this condition? **Heerfordt syndrome**
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What percentage of sarcoid pts have ocular involvement?
About 50
Uveitis: **Sarcoid**

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*Of pts with ocular sarcoid, how many will present with an anterior uveitis?*
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What percentage of sarcoid pts have ocular involvement? About 50.

Of pts with ocular sarcoid, how many will present with an anterior uveitis? About 2/3.
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How will the rest present?
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What percentage of sarcoid pts have ocular involvement?
About 50.

Of pts with ocular sarcoid, how many will present with an anterior uveitis?
About 2/3.

How will the rest present?
Most with either a posterior uveitis or panuveitis.
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What percentage of sarcoid pts have ocular involvement?
About 50%

For what population is the incidence of ocular involvement far higher--around 90%?
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-- Uveitis
-- Arthritis
-- Rash

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--Uveitis
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Early-onset sarcoid is difficult to distinguish from what other immunologic dz of childhood?
Uveitis: Sarcoid

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Early-onset sarcoid presents classically with a triad of signs/symptoms—what are they? Uveitis, Arthritis, Rash.

Early-onset sarcoid is difficult to distinguish from what other immunologic dz of childhood? JRA--juvenile rheumatoid arthritis (aka juvenile idiopathic arthritis, JIA).
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Who is the typical sarcoid pt in the US?
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About 50.

Who is the typical sarcoid pt. in the US?
An African-American.

How about world-wide? Which ethnic group has the highest prevalence of sarcoid?
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World-wide?

How about world-wide? Which ethnic group has the highest prevalence of sarcoid?
Whites residing in direction + continent
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Who is the typical sarcoid pt in the US? An African-American. How about world-wide? Which ethnic group has the highest prevalence of sarcoid? Whites residing in Northern Europe.
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During what age-range does dz onset typically occur?
Uveitis: **Sarcoid**

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*What percentage of sarcoid pts have ocular involvement?*
About 50

*Who is the typical sarcoid pt in the US?*
An African-American

*During what age-range does dz onset typically occur?*
Usually 20 to 50
In broadest terms, how would you describe sarcoid?  
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Is there a gender predilection for sarcoid?
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*Is there a gender predilection for sarcoid?*
Female (but only slightly, so don’t consider this when meshing)
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

Anterior

Posterior

Intermediate

Panuveitis

Sarcoid
Per the Uveitis book, what are the two basic forms of anterior uveitis?
Uveitis: *Anterior*

Granulomatous → Nongranulomatous

*Per the Uveitis book, what are the two basic forms of anterior uveitis?*
Uveitis: Anterior

Granulomatous

Nongranulomatous

What are the two categories of nongranulomatous anterior uveitis?
Uveitis: Anterior

Granulomatous

Nongranulomatous

Acute

Chronic

What are the two categories of nongranulomatous anterior uveitis?
What are the two categories of acute anterior uveitis?
Uveitis: **Anterior**

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

**What are the two categories of acute anterior uveitis?**
As an isolated anterior uveitis, how can sarcoid present?
As an isolated anterior uveitis, how can sarcoid present?
As anything!
Uveitis: **Anterior**

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

**Nongranulomatous**

**Acute**
- **Unilateral**
  - HLA-B27 dz
  - Posner-Schlossman
  - **Sarcoid**
  - **Syphilis**
  - HSV/VZV
  - **TB**
- **Bilateral**
  - TINU
  - Behçet
  - Drug rxn
  - Leptospirosis
  - **Sarcoid**
  - **Syphilis**
  - IBD/PA
  - **TB**

**Chronic**
- JIA
- FHI
- IBD/PAHLA-B27 dz
- **Sarcoid**
- **Syphilis**
- **TB**

Remember: Sarcoid, syphilis and TB can manifest as any sort of uveitis!
Uveitis: **Anterior**

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

Nongranulomatous
- Acute
  - Unilateral
    - HLA-B27 dz
    - Posner-Schlossman
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    - Syphilis
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    - Syphilis
    - IBD/PA
    - TB
- Chronic
  - JIA
  - FHI
  - IBD/PA
  - Sarcoid?
  - Syphilis
  - TB

As an isolated anterior uveitis, how does sarcoid typically present?
As an isolated anterior uveitis, how does sarcoid typically present?

As a granulomatous uveitis
Uveitis: **Anterior**

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

**Nongranulomatous**

**Histologically speaking, what makes an inflammatory condition ‘granulomatous’?**
The presence of epithelioid and giant cells

**In clinical ophtho-speak, to what does the term granulomatous refer?**
To a particular slit-lamp appearance of KP in uveitis

**What do granulomatous KP look like?**
They are large, grayish, and look ‘greasy’

A pt has granulomatous KP. If a KP was scraped and examined microscopically, would it be chock full of epithelioid and/or giant cells?
Not necessarily. While significant overlap exists between the two, it is not the case that ‘clinically granulomatous dz’ is always histologically granulomatous

As an isolated anterior uveitis, how does sarcoid typically present?
As a **granulomatous uveitis**
Uveitis: Anterior

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

**Nongranulomatous**

---

**Histologically speaking, what makes an inflammatory condition 'granulomatous'?**

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As a **granulomatous uveitis**
Uveitis: **Anterior**

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

---

**Nongranulomatous**
- IBD/PA
- TB

---

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### Nongranulomatous

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- Sarcoid
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Nongranulomatous

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As an isolated anterior uveitis, how does sarcoid typically present? As a granulomatous uveitis.

As noted in the text:

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: **Anterior**

**Granulomatous**
- TB
- Sarcoid
- Syphilis
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**Nongranulomatous**

As an isolated anterior uveitis, how does sarcoid typically present?

**As a granulomatous uveitis**

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The presence of epithelioid and giant cells

### In clinical ophtho-speak, to what does the term granulomatous refer?
To a particular slit-lamp appearance of KP in uveitis

Throughout the *anterior uveitis* slides, the term *granulomatous* refers to the slit-lamp appearance of the KP, not to the histology of the condition.

A pt has granulomatous KP. If a KP was scraped and examined microscopically, would it be chock full of epithelioid and/or giant cells?
Not necessarily. While significant overlap exists between the two, it is not the case that ‘clinically granulomatous dz’ is always histologically granulomatous

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As a **granulomatous uveitis**
Uveitis: **Anterior**

Granulomatous

- TB
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- HSV

Nongranulomatous

What three structures manifest important clinical signs in a typical case of sarcoid anterior uveitis?

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Uveitis: **Anterior**

Granulomatous
- TB
- Sarcoid
- Syphilis
- HSV

Nongranulomatous

What three structures manifest important clinical signs in a typical case of sarcoid anterior uveitis?
The cornea, iris and (to a lesser extent) anterior vitreous

What are the findings for each?
-- *Cornea* (one finding):
-- *Iris* (two findings):
-- *Anterior vitreous* (one finding):

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Uveitis: **Anterior**

- **Granulomatous**
  - TB
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- **Nongranulomatous**

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**What three structures manifest important clinical signs in a typical case of sarcoid anterior uveitis?**  
The cornea, iris and (to a lesser extent) anterior vitreous

**What are the findings for each?**

---

- **Cornea** (one finding): **Large granulomatous KP**
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Granulomatous

- TB
- **Sarcoid**
- Syphilis
- HSV

Nongranulomatous

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Uveitis: **Anterior**

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Uveitis: **Anterior**

**Granulomatous**
- TB
- Sarcoid
- Syphilis
- HSV

**Nongranulomatous**

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*What three structures manifest important clinical signs in a typical case of sarcoid anterior uveitis?*

The cornea, iris and (to a lesser extent) anterior vitreous

---

*What are the findings for each?*

-- **Cornea** (one finding): **Large granulomatous KP**
-- **Iris** (two findings): **Nodules** and **synechiae**
-- **Anterior vitreous** (one finding):
Uveitis: **Anterior**

Granulomatous
- TB
- **Sarcoid**
- Syphilis
- HSV

Nongranulomatous

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Uveitis: **Anterior**

Granulomatous
- TB
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Nongranulomatous

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**Cornea** (one finding): **Large granulomatous KP**

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- TB
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What are the findings for each?

--- **Cornea** (one finding): **Large granulomatous KP**

What two-word term is often used to describe the appearance of KP in sarcoid??
Uveitis: Anterior

Granulomatous
- TB
- Sarcoid
- Syphilis
- HSV

Nongranulomatous

What three structures manifest important clinical signs in a typical case of sarcoid anterior uveitis? The cornea, iris and (to a lesser extent) anterior vitreous

What are the findings for each?
- Cornea (one finding): Large granulomatous KP

What two-word term is often used to describe the appearance of KP in sarcoid? ‘Mutton fat’
Mutton-fat KP
What three structures manifest important clinical signs in a typical case of sarcoid anterior uveitis? The cornea, iris and (to a lesser extent) anterior vitreous.

What are the findings for each?
- **Cornea** (one finding): **Large granulomatous KP**

What two-word term is often used to describe the appearance of KP in sarcoid? ‘Mutton fat’

The KP in sarcoid tend to be concentrated in a particular region of the endothelial surface. What is the eponymous name for this region?
What three structures manifest important clinical signs in a typical case of sarcoid anterior uveitis? The cornea, iris and (to a lesser extent) anterior vitreous

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What two-word term is often used to describe the appearance of KP in sarcoid? ‘Mutton fat’

The KP in sarcoid tend to be concentrated in a particular region of the endothelial surface. What is the eponymous name for this region? **Arlt’s triangle**
KP in Arlt's triangle
Uveitis: **Anterior**

### Granulomatous
- TB
- **Sarcoid**
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### Nongranulomatous

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There are three eponymous iris nodules in sarcoid. What are they…
- ?
- ?
- ?
Uveitis: **Anterior**

Granulomatous
- TB
- *Sarcoid*
- Syphilis
- HSV

Nongranulomatous

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---

*There are three eponymous iris nodules in sarcoid. What are they…*
- Koeppc nodules
- Busacca nodules
- Berlin nodules
Uveitis: *Anterior*

Granulomatous
- TB
- *Sarcoid*
- Syphilis
- HSV

Nongranulomatous

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*There are three eponymous iris nodules in sarcoid. What are they… and where on the iris are they found?*
- *Koeppe nodules:* ?
- *Busacca nodules:* ?
- *Berlin nodules:* ?
Uveitis: **Anterior**

Granulomatous
- TB
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*There are three eponymous iris nodules in sarcoid. What are they…and where on the iris are they found?*
- **Koepppe nodules**: Pupillary margin
- **Busacca nodules**: Mid-iris
- **Berlin nodules**: The iris angle
Uveitis: *Anterior*

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Are these pathognomonic for sarcoid?
Uveitis: **Anterior**

Granulomatous
- TB
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- HSV

Nongranulomatous

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--Busacca nodules: Mid-iris
--Berlin nodules: The iris angle

Are these pathognomonic for sarcoid? **No**

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What three structures manifest important clinical signs in a typical case of sarcoid anterior uveitis? The cornea, iris and (to a lesser extent) anterior vitreous

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- Cornea (one finding): Large granulomatous KP
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---Anterior vitreous (one finding): Clumped inflammatory cells

Granulomatous

---TB

---Sarcoid

---Syphilis

---HSV

Nongranulomatous

Are iris synechiae common in sarcoid uveitis?

Yes

Where are synechiae located in sarcoid?

They can be posterior, peripheral-anterior (i.e., PAS), or both.

If left unchecked, will synechiae in sarcoid lead to angle-closure glaucoma?

Yes

Uveitis: Anterior

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Are iris synechiae common in sarcoid uveitis?
Yes
Uveitis: **Anterior**

Granulomatous
- TB
- **Sarcoid**
- Syphilis
- HSV

Nongranulomatous

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**What three structures manifest important clinical signs in a typical case of sarcoid anterior uveitis?**

The cornea, iris and (to a lesser extent) anterior vitreous

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**What are the findings for each?**

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**Cornea** (one finding): Large granulomatous KP

---

**Iris** (two findings): Nodules and **synechiae**

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**Are iris synechiae common in sarcoid uveitis?**
Yes

---

**Where are synechiae located in sarcoid?**
Granulomatous
- TB
- Sarcoid
- Syphilis
- HSV

Nongranulomatous

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The cornea, iris and (to a lesser extent) anterior vitreous

What are the findings for each?
- Cornea (one finding): Large granulomatous
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Are iris synechiae common in sarcoid uveitis? Yes

Where are synechiae located in sarcoid? They can be posterior, peripheral-anterior (ie, PAS), or both

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Uveitis: Anterior

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- TB
- Sarcoid
- Syphilis
- HSV

Nongranulomatous

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Are iris synechiae common in sarcoid uveitis? Yes

Where are synechiae located in sarcoid?
They can be posterior, peripheral-anterior (ie, PAS), or both

If left unchecked, will synechiae in sarcoid lead to angle-closure glaucoma?
What three structures manifest important clinical signs in a typical case of sarcoid anterior uveitis?
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-- Anterior vitreous (one finding): Clumped inflammatory cells

Are iris synechiae common in sarcoid uveitis?
Yes

Where are synechiae located in sarcoid?
They can be posterior, peripheral-anterior (ie, PAS), or both

If left unchecked, will synechiae in sarcoid lead to angle-closure glaucoma?
Yes
Posterior synechiae (and the world’s largest Busacca nodule) in sarcoid
Uveitis: **Anterior**

Granulomatous
- TB
- Sarcoid
- Syphilis
- HSV

Nongranulomatous

What three structures manifest important clinical signs in a typical case of sarcoid anterior uveitis?
The cornea, iris and (to a lesser extent) anterior vitreous

What are the findings for each?
- Cornea (one finding): Large granulomatous KP
- Iris (two findings): Nodules and synechiae
- Anterior vitreous (one finding): **Clumped inflammatory cells** (especially inferiorly)

Clumps of inflammatory cells floating in the vitreous are known as what?
Uveitis: **Anterior**

Granulomatous

- **TB**
- **Sarcoid**
- **Syphilis**
- **HSV**

Nongranulomatous

What three structures manifest important clinical signs in a typical case of sarcoid anterior uveitis? The cornea, iris and (to a lesser extent) anterior vitreous.

What are the findings for each?

--- **Cornea** (one finding): **Large granulomatous KP**

--- **Iris** (two findings): **Nodules** and **synechiae**

--- **Anterior vitreous** (one finding): **Clumped inflammatory cells** (especially inferiorly)

Clumps of inflammatory cells floating in the vitreous are known as what?

‘**Snowballs**’
Snowballs
Uveitis: **Anterior**

- **Granulomatous**
  - *TB*?
  - *Sarcoid*
  - *Syphilis*?
  - *HSV*?
  - *VKH*?
  - *Toxoplasmosis*?
  - *Lyme*?

- **Nongranulomatous**

---

**Of the entities listed here, which other(s) may present with mutton-fat KP and iris nodules?**

---

1) The uveitis is profiled
2) The profiled case is meshed
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1) The uveitis is profiled
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**Uveitis: Anterior**

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

- **Nongranulomatous**

---

Of the entities listed here, which other(s) may present with mutton-fat KP and iris nodules? **TB** and **syphilis**. (Remember, TB, sarcoid and syphilis can present in multiple ways!)
Uveitis

1) The uveitis is profiled
2) The profiled case is meshed
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Anterior

Posterior

Intermediate

Panuveitis

Sarcoid

Is intermediate uveitis a common manifestation of sarcoid?

No; only about 7% of sarcoid uveitis cases present this way. Nevertheless, be sure to rule out sarcoid in all intermediate uveitis cases.

In sarcoid vitritis, inflammatory aggregates often organize in a linear fashion. What descriptive term is used for this linear collection of clumped inflammatory material?

'String of pearls'
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 intermediate uveitis a common manifestation of sarcoid?*
No; only about [7%] of sarcoid uveitis cases present this way. Nevertheless, be sure to rule out sarcoid in all intermediate uveitis cases.
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The term string of pearls is also used to describe the vitreous aggregates in another inflammatory condition--which one? (Hint: It’s an infectious endophthalmitis)
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Uveitis

Anterior

Posterior

Intermediate

Panuveitis

Sarcoid

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Candida endophthalmitis
On the other hand, sarcoid is well-known for presenting as a *posterior uveitis*.
Uveitis: **Posterior**

Choroiditis  
**Chorioretinitis** or  
Retinochoroiditis  
Retinitis  
Neuroretinitis

What percentage of sarcoid uveitis pts have posterior manifestations?
Uveitis: **Posterior**

What percentage of sarcoid uveitis pts have posterior manifestations? About 20
Uveitis: *Posterior*

- Chorioretinitis or Retinochoroiditis
- Retinitis
- Neuroretinitis

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What percentage of sarcoid uveitis pts have posterior manifestations?
About 20

What are the two most common posterior manifestations?
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What percentage of sarcoid uveitis pts have posterior manifestations?
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What are the two most common posterior manifestations?
--Granulomas of the choroid, retina and/or optic nerve
--Retinal
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What are the two most common posterior manifestations?
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Choroidal granulomas in sarcoid
Choroidal granulomas in sarcoid. Note the ‘punched out’ appearance
ONH granuloma in sarcoid
ONH granuloma with neuroretinitis
What percentage of sarcoid uveitis pts have posterior manifestations?
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Retinal vasculitis

Is the vasculitis primarily an arteritis, a phlebitis, or both?
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What are the two most common posterior manifestations?
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Is the vasculitis primarily an arteritis, a phlebitis, or both?
Sarcoid tends to cause a phlebitis (more specifically, a periphlebitis)
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Uveitis: **Posterior**

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- Neuroretinitis
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**What is the classic appearance of sarcoid periphlebitis?**

Small yellowish-white nodular granulomas accumulate along venules in a pattern referred to as **three words**.

---

**Taches de bougie**
Chorioretinitis or Retinochoroiditis

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What French term for candle-wax drippings is encountered frequently in the ophthalmic literature?
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Anterior

Posterior

Intermediate

Panuveitis

Sarcoid

It is important to recognize that sarcoid can present as a panuveitis, with primary inflammation occurring in the anterior, intermediate and posterior segments of the eye simultaneously!
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Thin cut CT of the chest
CT chest in sarcoid: dense focal nodular infiltrates; bilateral hilar lymphadenopathy
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If both CXR and CT fail to reveal evidence of sarcoid, what other imaging test could be considered?
**Uveitis**

**Sarcoid: Diagnosis**

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*If both CXR and CT fail to reveal evidence of sarcoid, what other imaging test could be considered? Whole-body gallium scan (good luck getting that approved)*
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What two lab tests should be considered? Serum ACE, and lysozyme
**Uveitis**

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Thin cut CT of the chest

What two lab tests should be considered?

Serum ACE and lysozyme

*What does ACE stand for?*

Angiotensin converting enzyme

With what functional system/unit is this enzyme associated?

The renin-angiotensin system

What role does ACE play in the renin-angiotensin system?

It converts angiotensin I to angiotensin II
Uveitis

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Briefly, what does the renin-angiotensin system do?
Help regulate blood pressure and fluid status
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Briefly, what is lysozyme?

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An enzyme secreted by monocytes and PMNs.
Uveitis

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Why are ACE levels elevated in sarcoid?

The epithelioid and giant cells found in the granulomas are believed to secrete it.

Is elevated ACE pathognomonic for sarcoid?
No, it is elevated in many systemic conditions.
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Fair enough. But how about in a pt presenting with uveitis? If such a pt has elevated ACE, is it pathognomonic for sarcoid?
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Fair enough. But how about in a pt presenting with uveitis? If such a pt has elevated ACE, is it pathognomonic for sarcoid?
No. Elevated ACE has been associated with other uveitides as well.
Uveitis

Sarcoid: Diagnosis

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Why are lysozyme levels elevated in sarcoid?
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Thin cut CT of the chest

**What two lab tests should be considered?**

Serum ACE, and lysozyme

*In sarcoidosis, are ACE and lysozyme levels high?*

**Why are lysozyme levels elevated in sarcoid?**

The epithelioid cells in the granulomas are believed to secrete it.

What is CXR? CXR stands for chest X-ray, which is a common diagnostic tool used to visualize the chest cavity, including the lungs, heart, and other structures. In the context of sarcoidosis, a normal CXR can help rule out other conditions and support the diagnosis, but if suspicion remains high, additional imaging or further tests may be necessary. Commonly considered imaging modalities include CT scans of the chest. Other laboratory tests considered in the diagnosis of sarcoidosis include:

- **Serum ACE (Angiotensin-Converting Enzyme)**: Elevated levels may suggest sarcoidosis.
- **Lysozyme**: May be elevated in various systemic conditions, including sarcoidosis.

These tests, combined with clinical findings, help in confirming or ruling out sarcoidosis. It's important to note that while sarcoidosis can present with various symptoms and signs, a multidisciplinary approach is crucial for accurate diagnosis and management.
Uveitis

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If the levels are WNL, does this rule out ocular sarcoidosis?
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What common class of HTNive med will artificially lower the ACE level?
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ACE inhibitors. Be sure to know whether your pt takes an ACEI before ordering a level!
Uveitis

Sarcoid: Diagnosis

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Thin cut CT of the chest

Two other common lab tests could reasonably be expected to be abnormal in sarcoid. What are they?

Serum ACE, and lysozyme, Ca\(^{2+}\) and alk phos

In sarcoidosis, are ACE and lysozyme levels expected to be high?

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Two other common lab tests could reasonably be expected to be abnormal in sarcoid. What are they? Serum calcium, and alkaline phosphatase

In what percent of sarcoid cases is \( \text{Ca}^{2+} \) elevated? Only about 10, so it’s not terribly helpful
Uveitis

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What common class of HTNive med will artificially lower the ACE level?

ACE inhibitors. Be sure to know whether your pt takes an ACEI before ordering a level!

Two other common lab tests could reasonably be expected to be abnormal in sarcoid. What are they?

Serum calcium, and alkaline phosphatase

In what percent of sarcoid cases is Ca$^{2+}$ elevated?

Only about 10, so it’s not terribly helpful

In what percent of sarcoid cases is alk phos elevated?

Also about 10 (not necessarily the same 10, though)
As mentioned previously, CXR is the best screening test for sarcoid. If CXR is read as normal, but clinical suspicion for sarcoidosis remains high, what other imaging modality should be considered? Thin cut CT of the chest

What two lab tests should be considered? Serum ACE, and lysozyme, Ca²⁺ and alk phos

In sarcoidosis, are ACE and lysozyme levels expected to be abnormally high, or low? High

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**Uveitis**

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**What two lab tests should be considered?**

Serum ACE, and lysozyme

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*What is the only way to definitively diagnose sarcoidosis?*
As mentioned previously, CXR is the best screening test for sarcoid. If CXR is read as normal, but clinical suspicion for sarcoidosis remains high, what other imaging modality should be considered?

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Via biopsy demonstrating the presence of noncaseating granulomas
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Main lacrimal gland

What do you have to worry about if you biopsy the main lac gland?
That you’ll inadvertently bag the ductules, thereby decreasing secretion and causing a dry eye
**Uveitis**

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If the conj has no obvious nodules, is it reasonable to perform a ‘blind biopsy;’ ie, of normal-appearing conj?
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Sarcoid: Treatment

What is the first-line med for sarcoid uveitis?
Uveitis

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Topical, periocular or systemic?
Uveitis

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What other treatment is important to include, and why?
What is the first-line med for sarcoid uveitis?
Steroids

*Topical, periocular or systemic?*
Yes

*What other treatment is important to include, and why?*
Cycloplegia (if there is a significant anterior component), both for comfort and to prevent synechiae
**Uveitis**

**Sarcoid: Treatment**

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*If steroid therapy fails to yield adequate control, what is the next step?*
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Immunomodulatory therapy (eg, three specific meds)
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[one specific med]
Uveitis
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What about biologics--are they useful in controlling sarcoid uveitis?
Yes, specifically with infliximab (Remicade)