

Q

Systemic Meds and Ocular Toxicity



- **Chlorpromazine (Thorazine)?**

- Thioridazine (Mellaril)
- Tamoxifen
- Sildenafil (Viagra)
- Cidofovir
- Isotretinoin (Accutane)
- Rifabutin
- Digitalis

- Blue tinting of vision
- Retinopathy rare at doses <800 mg/d
- Blair Witch cataract
- Iritis, hypotony can develop
- Causes a crystalline retinopathy
- Causes nyctalopia
- Yellow tinting of vision
- Causes uveitis with hypopyon

(Matching! Start with chlorpromazine and work down the list)



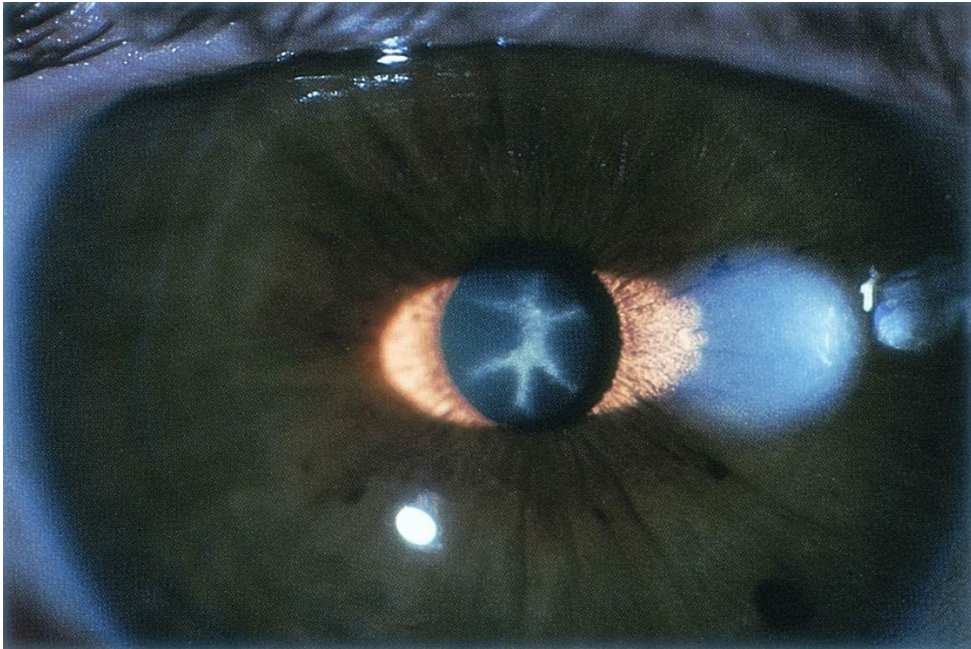
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Systemic Meds and Ocular Toxicity



Chlorpromazine: *Blair Witch* cataract



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Systemic Meds and Ocular Toxicity

- **Chlorpromazine (Thorazine)**

- *What class of medicine is chlorpromazine?*

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● *What class of medicine is chlorpromazine?*
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- *What sort of drug are neuroleptics?*

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- What sort of drug are neuroleptics?
They are antipsychotics--so-called 'major tranquilizers'

- *Kanamycin*

- *Digitalis*

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Chlorpromazine-associated pigmentation



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- *Keratopathy*
- *Digitalis*

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● Paracetamol

● Digitalis

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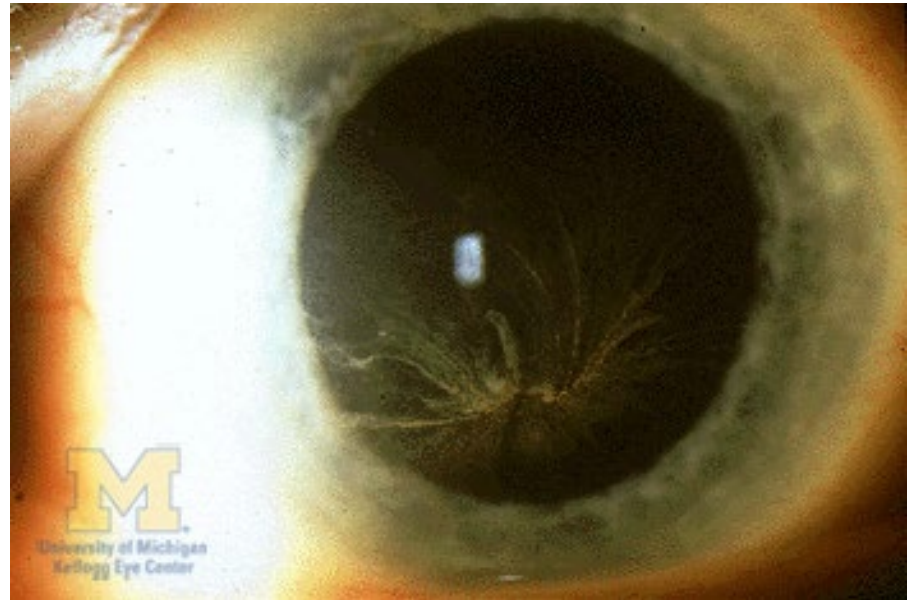
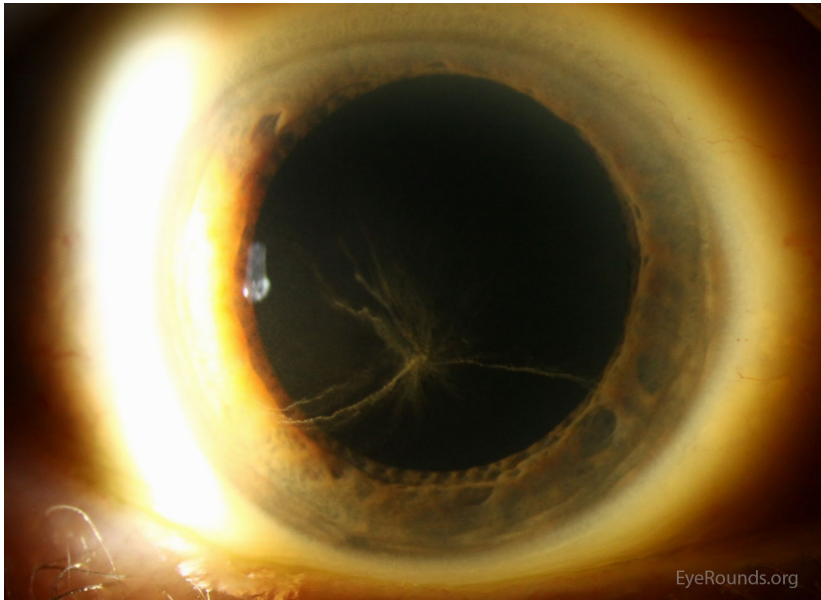
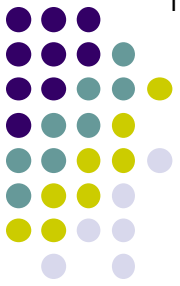
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Name three other meds, and one metabolic dz, associated with corneal verticillata:

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--Thorazine

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Mnemonic forthcoming...

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(the 'F' is the metabolic dz)

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- A**midarone
- **I**ndomethacin
- T**horazine
- H**ydroxychloroquine

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Name three other meds, and one metabolic dz, associated with corneal verticillata:

--**Fabry's dz?**

--**Amiodarone?**

-- **Indomethacin?**

--**Thorazine?**

--**Hydroxychloroquine?**

Of these, which is the most common cause?



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--**Amiodarone!**

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A pt on amiodarone with corneal verticillata c/o decreased vision. How should you respond?

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What class of metabolic disorder is Fabry's?



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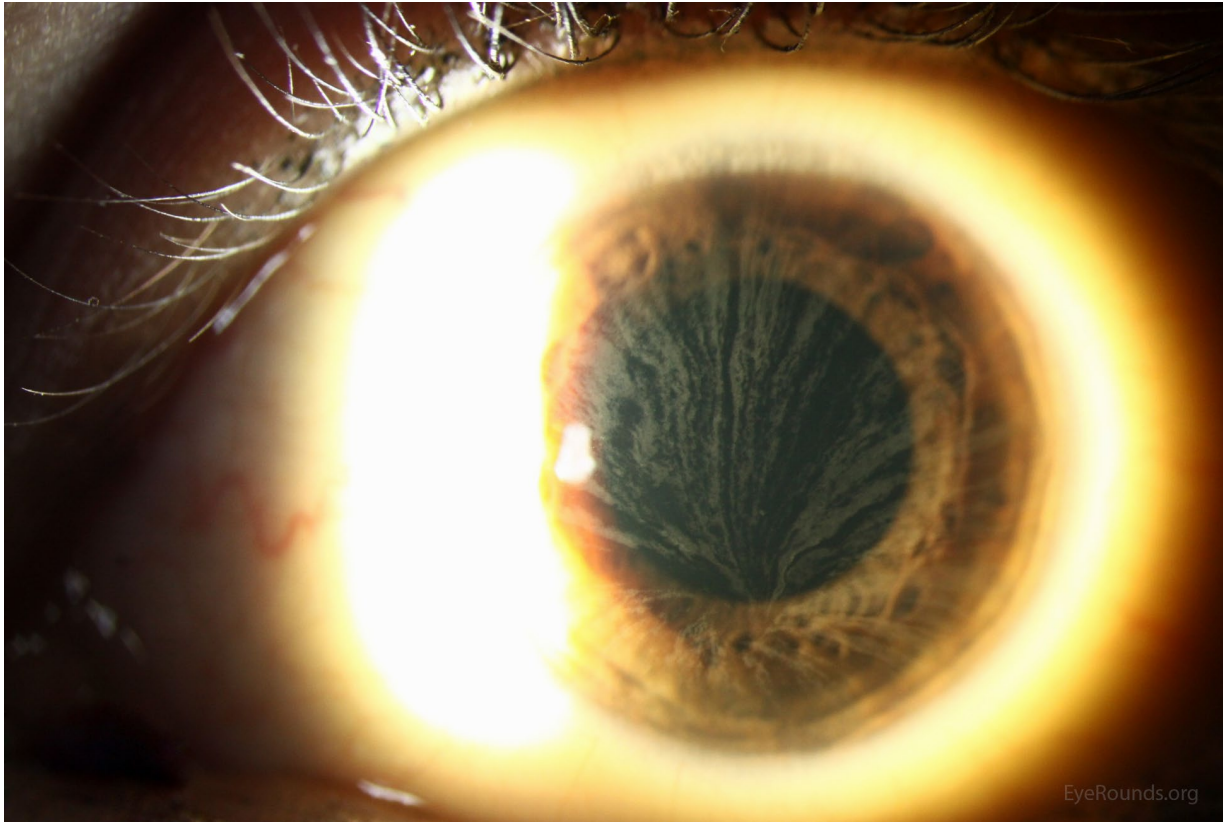
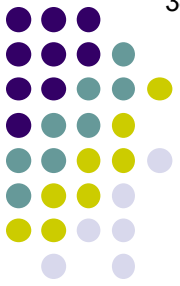
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What class of metabolic disorder is Fabry's?

A lysosomal-storage disorder

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Cornea verticillata in Fabry's dz



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What sort of med are phenothiazines?

They are neuroleptics

In addition to cataracts, what other ocular finding is associated with high-dose chlorpromazine?

It causes pigmentation

What corneal finding is associated with phenothiazine use?

Corneal verticillata

Chlorbutol

Digitalis

- Blue tinting of vision
- Retinopathy rare at doses <800 mg/d

Witch cataract

hypotony can
op
es a crystalline

What are corneal verticillata?

Whorl-shaped pigmented deposits found in the inferior interpalpebral zone of the cornea

By what other name is this condition known?

'Vortex keratopathy'

Are they visually significant?

Only rarely

Do verticillate respond to treatment?

Yes

Name three other drugs associated with corneal verticillata

-- Fabry's dz

-- Amiodarone

-- Indomethacin

-- Thorazine

-- Hydroxychloroquine

What class of metabolic disorder is Fabry's?

A lysosomal-storage disorder

Which enzyme is deficient in Fabry's?



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Systemic Meds and Ocular Toxicity

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--Angiokeratomas

In early adulthood:

--Cardiovascular problems

--Renal failure

--Seizures



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What is the clinical appearance of the angiokeratomas?

Q/A

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What is the clinical appearance of corneal verticillata?

Whorl-shaped pigmented deposits

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What is the clinical appearance of angiokeratomas?

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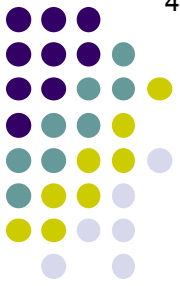
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Systemic Meds and Ocular Toxicity



Angiokeratomas in Fabry's dz



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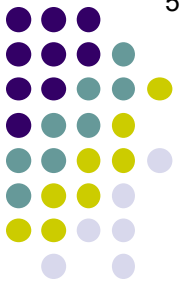
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Parinaud syndrome

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The neuroleptics, due to its anticholinergic activity
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Parinaud syndrome

Parinaud syndrome has four classic clinical features. One is impaired upgaze.

What are the other three?

--Impaired upgaze

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Oculogyric crisis

What is an 'oculogyric crisis'?

An idiosyncratic drug reaction consisting of tonic ~~upward~~ ^{downward} deviation of the eyes

Which class of drugs is associated with oculogyric crisis?

The neuroleptics, due to their anticholinergic effects

What other class of drugs is associated with oculogyric crisis?

The antiemetics

What medicine can be used to treat oculogyric crisis?

Anticholinergics

Oculogyric crisis involves tonic upward deviation of the eyes, and an inability looking downward. There is a condition that presents in the opposite fashion, ie, with a tonic downward gaze, and difficulty looking up. What is it?

Parinaud syndrome

Parinaud syndrome has four classic clinical features. One is impaired upgaze.

What are the other three?

- Impaired upgaze
- Light-near dissociation
- Lid retraction
- Convergence-retraction nystagmus

bry's?

a crystalline



Q

Systemic Meds and Ocular Toxicity

Chlorpromazine (Thorazine)

What class of medicine is chlorpromazine?
It is a phenothiazine

What sort of med are p
They are neuroleptics

What are corneal verticillata?
Whorl-shaped pigmented deposits found in the inferior interpalpebral zone of the cornea

- Blue tinting of vision
- Retinopathy rare at doses <800 mg/d

Witch cataract

hypotony can
a crystalline

Other than cataracts, what clinically significant ophthalmic occurrence can be induced by chlorpromazine?
Oculogyric crisis

What CNS structure is involved in Parinaud syndrome?

What is
An idios

of the eyes
bry's?

Which o
The ne
ie, with a tonic downward gaze, and difficulty looking up. What is it?

Parinaud syndrome

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Oculogyric crisis

a crystalline

What CNS structure is involved in Parinaud syndrome?

The dorsal midbrain

bry's?

What is an idiosyncrasy?

An idiosyncrasy

of the eyes

Which of the following is not a feature of Parinaud syndrome?

The nystagmus

ation of the eyes, and an inability to look up. It presents in the opposite fashion, ie, with a tonic downward gaze, and difficulty looking up. What is it?

Parinaud syndrome

What other class of medicine can cause oculogyric crisis?

The antiemetics

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Parinaud syndrome, aka...

By what two noneponymous names is Parinaud syndrome also known?

W

--Impaired upgaze

--Light-near dissociation

--Lid retraction

--Convergence-retraction nystagmus



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Parinaud syndrome, aka...Dorsal Midbrain/Pretectal Syndrome

What medicine can b

Anticholinergics

By what two noneponymous names is Parinaud syndrome also known?

Dorsal midbrain syndrome and pretectal syndrome

--Impaired upgaze

--Light-near dissociation

--Lid retraction

--Convergence-retraction nystagmus



Q

Systemic Meds and Ocular Toxicity

- *Chlorpromazine (Thorazine)*
 - ***Thioridazine (Mellaril)?***
 - *Tamoxifen*
 - *Sildenafil (Viagra)*
 - *Cidofovir*
 - *Isotretinoin (Accutane)*
 - *Rifabutin*
 - *Digitalis*
- Blue tinting of vision
 - Retinopathy rare at doses <800 mg/d
 - **Blair Witch cataract**
 - Iritis, hypotony can develop
 - Causes a crystalline retinopathy
 - Causes nyctalopia
 - Yellow tinting of vision
 - Causes uveitis with hypopyon
-



Systemic Meds and Ocular Toxicity

A

- *Chlorpromazine (Thorazine)*
 - *Thioridazine (Mellaril)*
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- A diagram consisting of two arrows. A light blue arrow points from the text 'Thioridazine (Mellaril)' to the text 'Retinopathy rare at doses <800 mg/d'. A green arrow points from the text 'Chlorpromazine (Thorazine)' to the text 'Blair Witch cataract'.



Q

Systemic Meds and Ocular Toxicity

- *Chlorpromazine (Thorazine)*
- **Thioridazine (Mellaril)**
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- Causes uveitis with hypopyon

What class of medicine is thioridazine?

- *Paracetamol*
- *Digitalis*



A

Systemic Meds and Ocular Toxicity

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What class of medicine is thioridazine?
Like chlorpromazine, it is a phenothiazine

- *Digoxin*
- *Digitalis*



Q

Systemic Meds and Ocular Toxicity

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What class of medicine is thioridazine?
Like chlorpromazine, it is a phenothiazine

In a word, what sort of retinopathy does thioridazine cause?

- *Paralytic*
- *Digitalis*



A

Systemic Meds and Ocular Toxicity

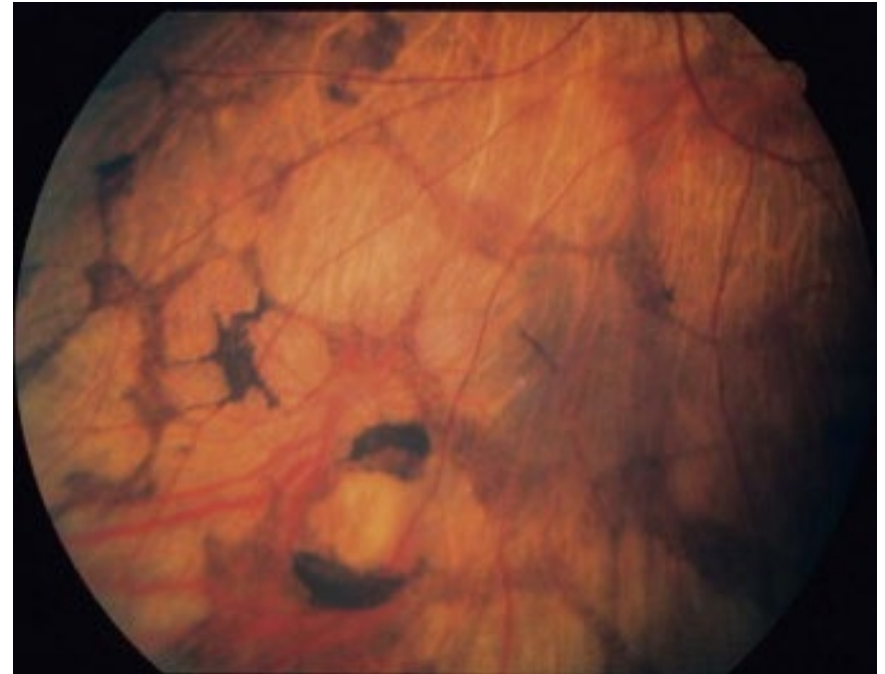
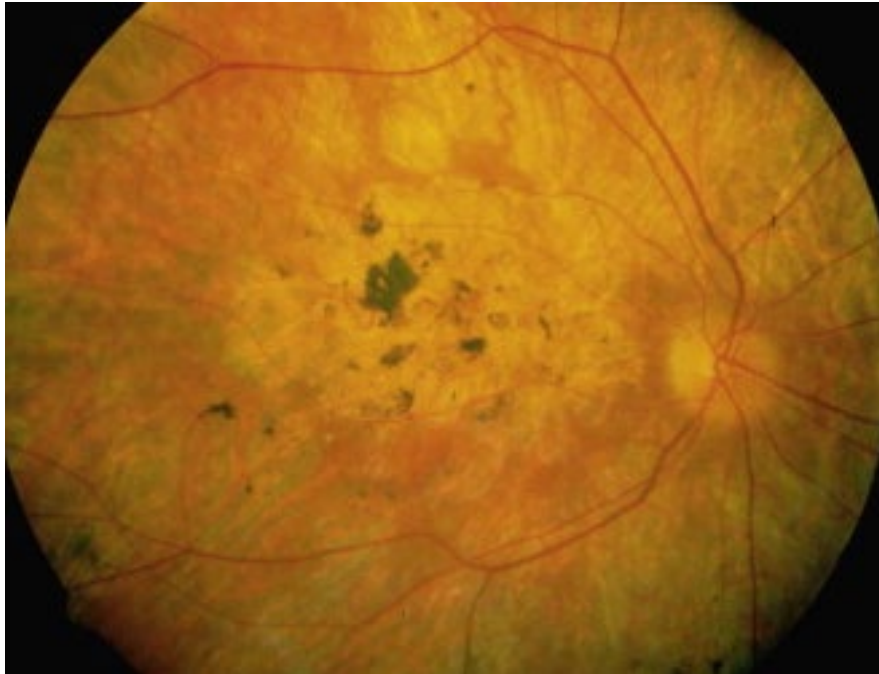
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What class of medicine is thioridazine?
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In a word, what sort of retinopathy does thioridazine cause?
Pigmentary retinopathy

- *Digitalis*

Systemic Meds and Ocular Toxicity



Thioridazine: Pigmentary retinopathy



Q

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Pigmentary retinopathy

Does thioridazine-induced retinopathy vision-threatening?

- *Digitalis*



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Does thioridazine-induced retinopathy vision-threatening?

Yes, profound vision loss can result

- *Digitalis*



Q

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Does thioridazine-induced retinopathy vision-threatening?

Yes, profound vision loss can result

Does thioridazine require regular monitoring for retinopathy?

● *Paracetamol*

- *Digitalis*



A

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Like chlorpromazine, it is a phenothiazine

In a word, what sort of retinopathy does thioridazine cause?

Pigmentary retinopathy

Does thioridazine-induced retinopathy vision-threatening?

Yes, profound vision loss can result

Does thioridazine require regular monitoring for retinopathy?

Not at normal doses, ie, less than 800 mg/d

- *Digitalis*

Systemic Meds and Ocular Toxicity



- **Chlorpromazine (Thorazine)**
- **Thioridazine (Mellaril)**

So, the phenothiazines cause *pigment-related* changes: Chlorpromazine skin/conj hyperpigmentation, cataracts, and verticillata, and Thioridazine causing a pigmentary retinopathy

- Chlorpromazine causes a crystalline retinopathy
- Causes nyctalopia
- Yellow tinting of vision
- Causes uveitis with hypopyon
- Causes a crystalline retinopathy
- Causes nyctalopia
- Yellow tinting of vision
- Causes uveitis with hypopyon



Q

Systemic Meds and Ocular Toxicity

- **Chlorpromazine (Thorazine)**
- **Thioridazine (Mellaril)**

- Blue tinting of vision
- Retinopathy rare at doses <800 mg/d

So, the phenothiazines cause *pigment-related* changes: *lenticular* cataract
Chlorpromazine skin/conj hyperpigmentation, cataracts, hypotony can
 and verticillata, and *pigmentary retinopathy?*

Thioridazine *Can chlorpromazine cause pigmentary retinopathy?*

- *Is*
- *Rifabutin*
- *Digitalis*
- Causes a crystalline retinopathy
- Causes nyctalopia
- Yellow tinting of vision
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A

Systemic Meds and Ocular Toxicity

- **Chlorpromazine (Thorazine)**
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- Blue tinting of vision
- Retinopathy rare at doses <800 mg/d

So, the phenothiazines cause *pigment-related* changes: *itch* cataract
Chlorpromazine skin/conj hyperpigmentation, cataracts, hypotony can
 and verticillata, and *pigmentary retinopathy? Yes but...*

Thioridazine *Can chlorpromazine cause pigmentary retinopathy?*

It can indeed. **But...**

- *Is*
- *Rifabutin*
- *Digitalis*
- Causes a crystalline retinopathy
- Causes nyctalopia
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Systemic Meds and Ocular Toxicity

- **Chlorpromazine (Thorazine)**
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- Blue tinting of vision
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So, the phenothiazines cause *pigment-related* changes: *itch* cataract
Chlorpromazine skin/conj hyperpigmentation, cataracts, hypotony can
 and verticillata, and *pigmentary retinopathy? Yes but...*

- Thioridazine
- *Can chlorpromazine cause pigmentary retinopathy?*
 It can indeed. **But...** for OKAP purposes it's probably
 best to think of them as chlorpromazine \leftrightarrow cataracts, etc,
 and thioridazine \leftrightarrow pigmentary retinopathy.

- *Rifabutin*
- *Digitalis*

- Yellow tinting of vision
- Causes uveitis with hypopyon



Q

Systemic Meds and Ocular Toxicity

- *Chlorpromazine (Thorazine)*
 - *Thioridazine (Mellaril)*
 - *Tamoxifen?*
 - *Sildenafil (Viagra)*
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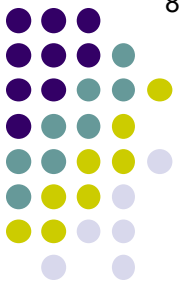


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Systemic Meds and Ocular Toxicity



Tamoxifen retinopathy



Q

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What sort of med is tamoxifen, and what is its mechanism of action?

Causes a crystalline retinopathy

Causes nyctalopia

Yellow tinting of vision

Causes uveitis with hypopyon



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Yellow tinting of vision

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Daily:

Cumulative:

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Causes nyctalopia

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 Cumulative: >10g

Causes a crystalline retinopathy

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 Yellow tinting of vision

Causes myopia with hypopyc

?

?

?

The Retina book identifies three general causes of crystalline retinopathy—what are they?



A

Systemic Meds and Ocular Toxicity

- Chlorpromazine (Thorazine)
- Thioridazine (Mellaril)
- **Tamoxifen**
- Sildenafil (Viagra)
- Cidofovir
- Blue tinting of vision
- Retinopathy rare at doses <800 mg/d
- Blair Witch cataract
- Iritis, hypotony can develop

Causes a crystalline retinopathy

Ocular dz

Systemic dz

Drug-induced

The Retina book identifies three general causes of crystalline retinopathy—what are they?

What sort of med is tamoxifen, and what is its mechanism of action?
An antiestrogen, it works by binding the estrogen receptor

What is the most common indications for tamoxifen therapy?
Hormone-receptor-positive breast cancer

What is a typical daily dose?
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At what daily and total doses of tamoxifen does the risk of retinopathy increase?
Daily: >200mg
Cumulative: >10g



Systemic Meds and Ocular Toxicity

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Causes a crystalline retinopathy

Causes nyctalopia
Yellow tinting of vision

Ocular dz

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Other than tamoxifen, what two drugs come to mind?

- Drug-induced**
- └ Tamoxifen
 - └ ?
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Causes nyctalopia
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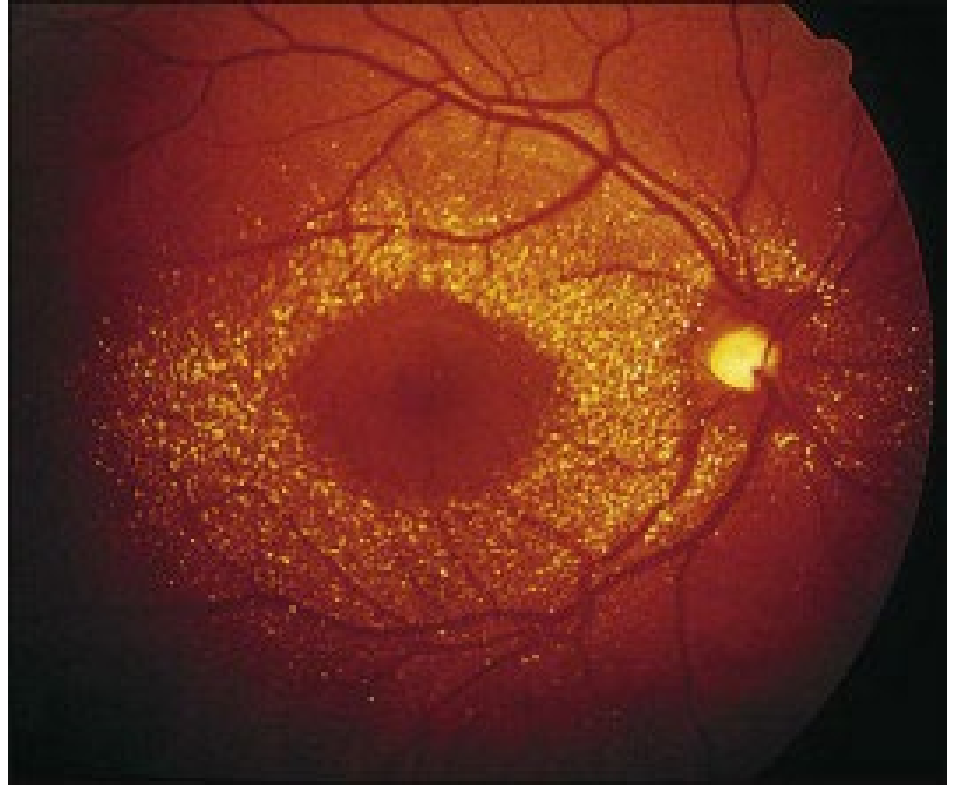
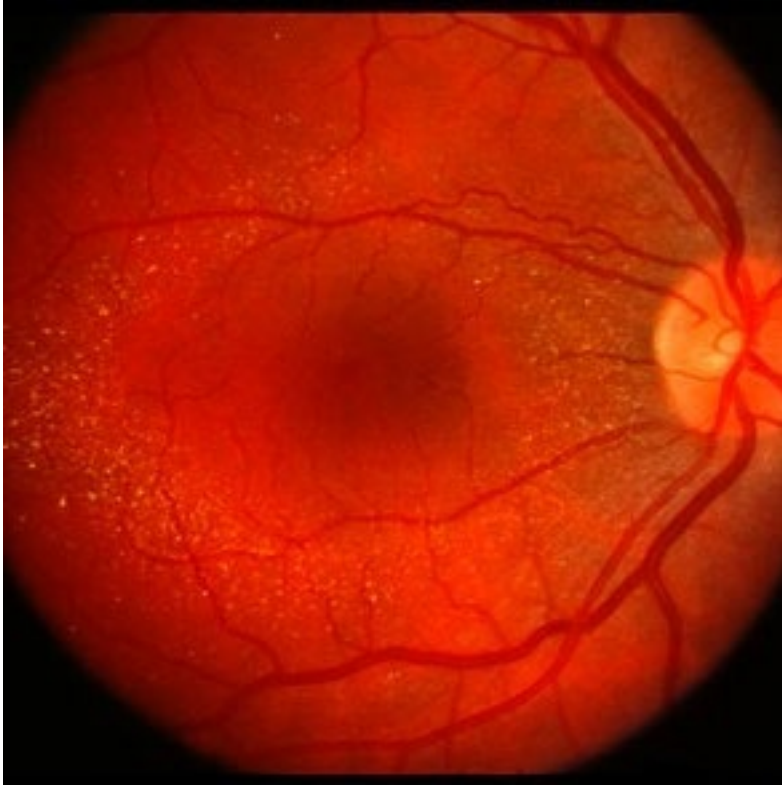
Ocular dz

Systemic dz

What is canthaxanthine, and what is it used for?
It is a carotenoid ingested to darken the skin (ie, a tanning substitute)

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Systemic Meds and Ocular Toxicity



Canthaxanthine crystalline retinopathy



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How does talc—a powder—get to the retina?

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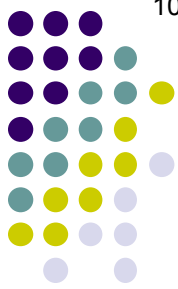
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It is a common contaminant in compounds used by IV drug users

Systemic Meds and Ocular Toxicity



Talc retinopathy



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In one word, what sort of condition is cystinosis?

A [redacted] disorder

Causes a crystalline retinopathy

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Systemic dz
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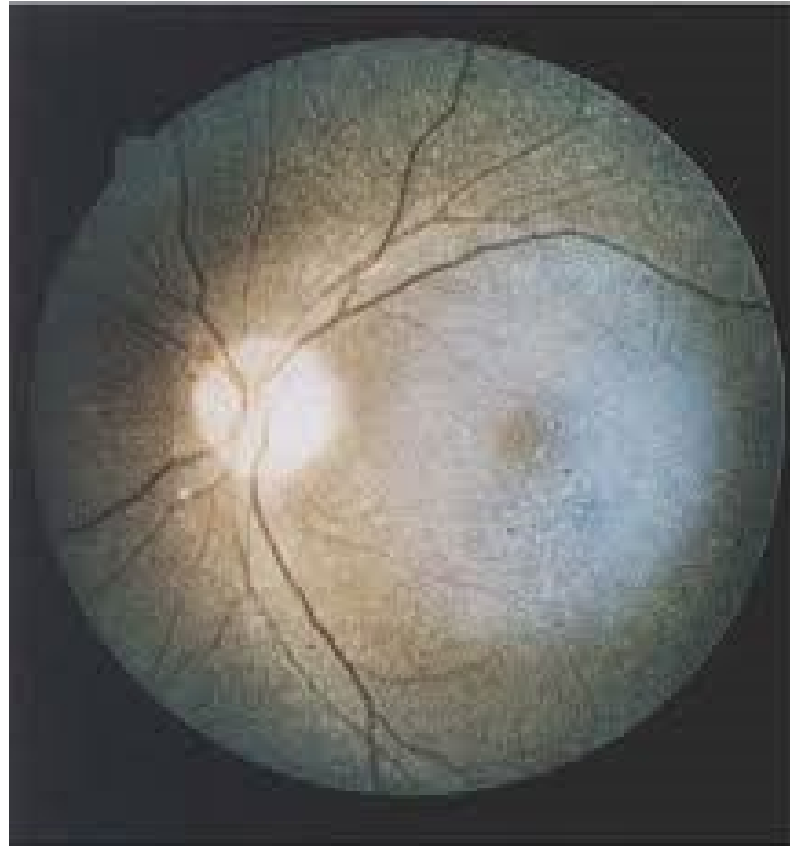
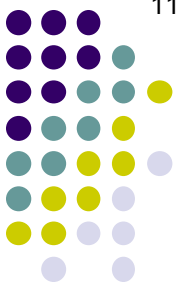
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Systemic Meds and Ocular Toxicity



Crystalline retinopathy in cystinosis



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Which organ is most profoundly affected? (It's not the eye)

Causes a crystalline retinopathy

Causes nyctalopia

Yellow tinting of vision

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The kidneys, resulting in Fanconi's syndrome

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- Failure to thrive → growth failure → short stature/dwarfism
- Rickets
- Progressive renal failure → ESRD

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What is the mechanism of action of cystinosis?
 Finally: The retina is not the crystal location for which cystinosis is best known—what is?

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In one word

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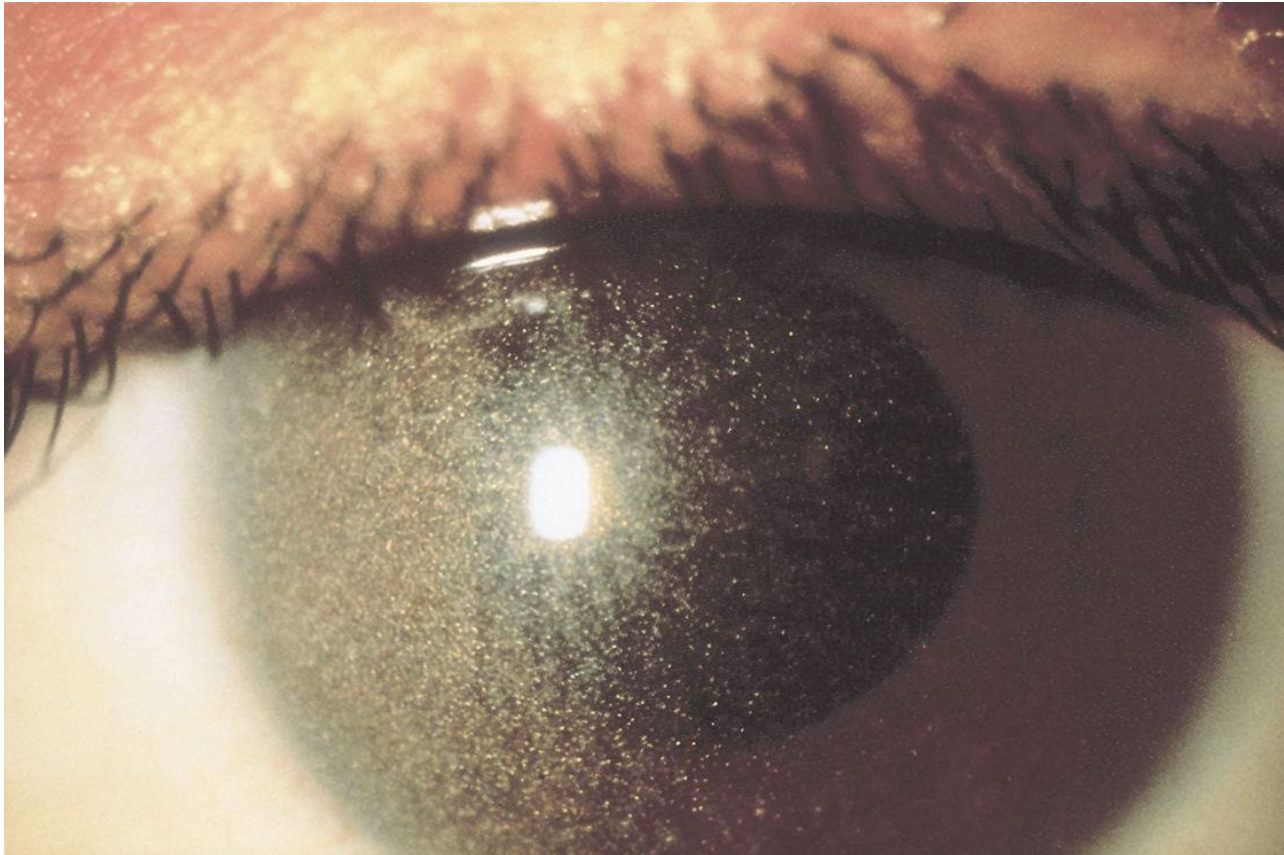
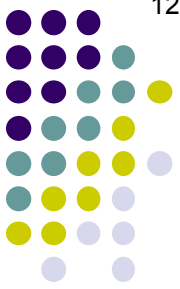
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Systemic dz
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Drug-induced

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Systemic Meds and Ocular Toxicity



Corneal crystals in cystinosis



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Ocular dz

└ ?

What ocular condition should come to mind?

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└ Bietti crystalline dystrophy

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What sort of condition is Bietti, ie, which tissue is 'dystrophied'?

A crystalline dystrophy

Causes a crystalline retinopathy

Ocular dz
↳ **Bietti crystalline dystrophy**

Systemic dz
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Causes nyctalopia
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Especially with hypopyc



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A choroidal dystrophy

Ocular dz
↳ **Bietti crystalline dystrophy**

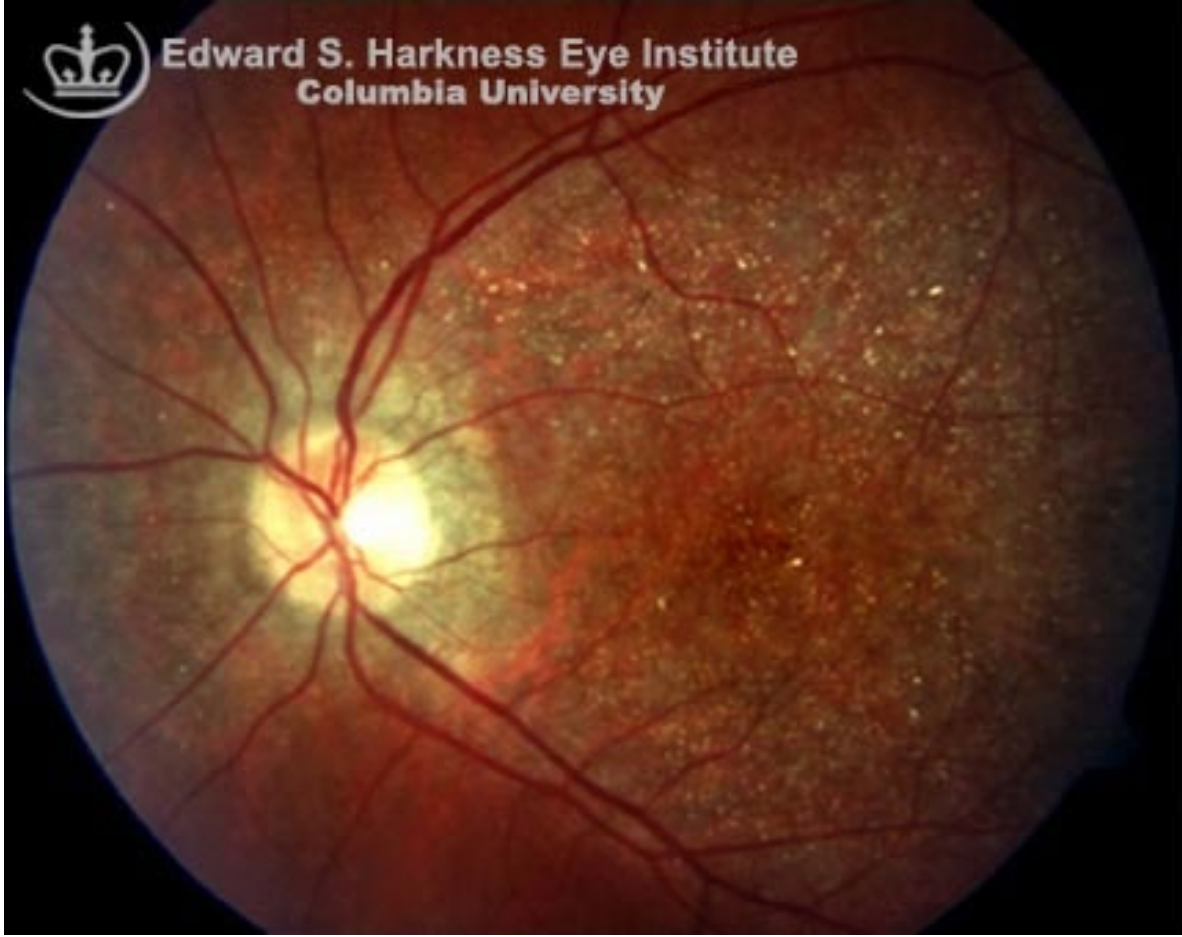
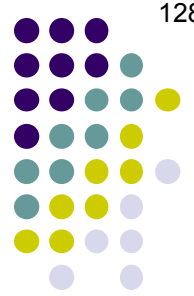
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Systemic dz
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Systemic Meds and Ocular Toxicity



Bietti crystalline dystrophy



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- Iritis, hypotony can develop

When you hear choroidal dystrophy, two other conditions should come to mind immediately—what are they?

--

--

What sort of condition is Bietti, ie, which tissue is 'dystrophied'?

A choroidal dystrophy

Causes a crystalline retinopathy

What sort of med is tamoxifen? An antiestrogen, it works by...

What is the most common... Hormone-receptor-positive...

What is a typical daily... 20 mg

What ocular condition should come to mind?

At what... retinopathy increase?
Daily: >200mg
Cumulative: >100g

Ocular dz
 ↳ **Bietti crystalline dystrophy**

Systemic dz
 ↳ Cystinosis

Drug-induced
 ↳ Tamoxifen
 ↳ Canthaxanthine
 ↳ Talc

Causes nyctalopia
 Yellow tinting of vision



A

Systemic Meds and Ocular Toxicity

- Chlorpromazine (Thorazine)
- Thioridazine (Mellaril)

- Blue tinting of vision
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When you hear choroidal dystrophy, two other conditions should come to mind immediately—what are they?
 --Choroideremia
 --Gyrate atrophy

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 An antiestrogen, it works by...

What is the most common side effect?
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What is a typical daily dose?
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Q

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 A choroidal dystrophy

Is it common, or rare?

Causes a crystalline retinopathy

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Systemic dz
 ↳ Cystinosis

Drug-induced
 ↳ Tamoxifen
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 ↳ Talc

What sort of med is tamoxifen?
 An antiestrogen, it works by blocking the estrogen receptor.

What is the most common indication?
 Hormone-receptor-positive breast cancer.

What is a typical daily dose?
 20 mg

At what dose does ocular toxicity increase?
Daily: >200mg
Cumulative: >100g

What ocular condition should come to mind?



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A choroidal dystrophy

Is it common, or rare?
Very rare

Ocular dz
↳ **Bietti crystalline dystrophy**

Causes a crystalline retinopathy

Systemic dz
↳ Cystinosis

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What sort of med is tamoxifen, and what is its mechanism of action?
An antiestrogen, it works by binding the estrogen receptor

Finally: Tamoxifen is a retinopathy risk factor in and of itself. However, its usage is also a risk factor when combined with another, more common drug. That is, concomitant tamoxifen use is a risk factor for the retinopathy associated with this other drug. What is this drug?

Retinopathy increase?

Daily: >200mg

Cumulative: >100g

Causes a crystalline retinopathy



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Hydroxychloroquine (Plaquenil)

Retinopathy increase?

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Causes a crystalline retinopathy



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Hydroxychloroquine (Plaquenil)

Does tamoxifen in conjunction with Plaquenil cause or exacerbate a crystalline maculopathy?

Retinopathy increase?

Daily: >200mg

Cumulative: >100g



Q/A

Systemic Meds and Ocular Toxicity

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Does tamoxifen in conjunction with Plaquenil cause or exacerbate a crystalline maculopathy?
No, it increases the likelihood of a Plaquenil-induced **maculopathy**

Retinopathy increase?

Daily: >200mg

Cumulative: >100g



A

Systemic Meds and Ocular Toxicity

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What sort of med is tamoxifen, and what is its mechanism of action?
An antiestrogen, it works by binding the estrogen receptor

Causes a bull's eye maculopathy!

Finally: Tamoxifen is a retinopathy risk factor in and of itself. However, its usage is also a risk factor when combined with another, more common drug. That is, concomitant tamoxifen use is a risk factor for the retinopathy associated with this other drug. What is this drug?

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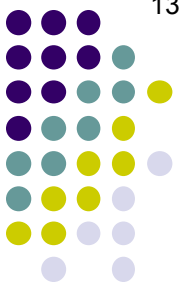
No, it increases the likelihood of a Plaquenil-induced **bull's eye maculopathy**

Retinopathy increase?

Daily: >200mg

Cumulative: >100g

Systemic Meds and Ocular Toxicity



Tamoxifen + Plaquenil: Bull's eye maculopathy



Q

Systemic Meds and Ocular Toxicity

- *Chlorpromazine (Thorazine)*
- *Thioridazine (Mellaril)*
- *Tamoxifen*
- ***Sildenafil (Viagra)?***
- *Cidofovir*
- *Isotretinoin (Accutane)*
- *Rifabutin*
- *Digitalis*
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- Retinopathy rare at doses <800 mg/d
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- Iritis, hypotony can develop
- Causes a crystalline retinopathy
- Causes nyctalopia
- Yellow tinting of vision
- Causes uveitis with hypopyon



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- What class of med is sildenafil?
- Yellow tinting of vision
 - Causes uveitis with hypopyon



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What class of med is sildenafil?

It is a phosphodiesterase-5 (PDE5) inhibitor



Q

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How do PDE5 inhibitors affect vision?

Because they have a modest inhibitory effect on PDE-6, an enzyme in the phototransduction process



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- Is it all PDE5 inhibitors, or just sildenafil?*
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Is it all PDE5 inhibitors, or just sildenafil?

All of them can have this effect



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Are the effects reversible?
- Yellow tinting of vision
 - Causes uveitis with hypopyon



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- Are the effects reversible?*
Yes
- Yellow tinting of vision
 - Causes uveitis with hypopyon



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Sildenafil has another, unrelated ocular effect. What is it?

PDE5 inhibitors, or just sildenafil?

Can other drugs in this class have this effect?

Are these effects reversible?

- *Amphotericin B*
- *Digitalis*
- Yellow tinting of vision
- Causes uveitis with hypopyon



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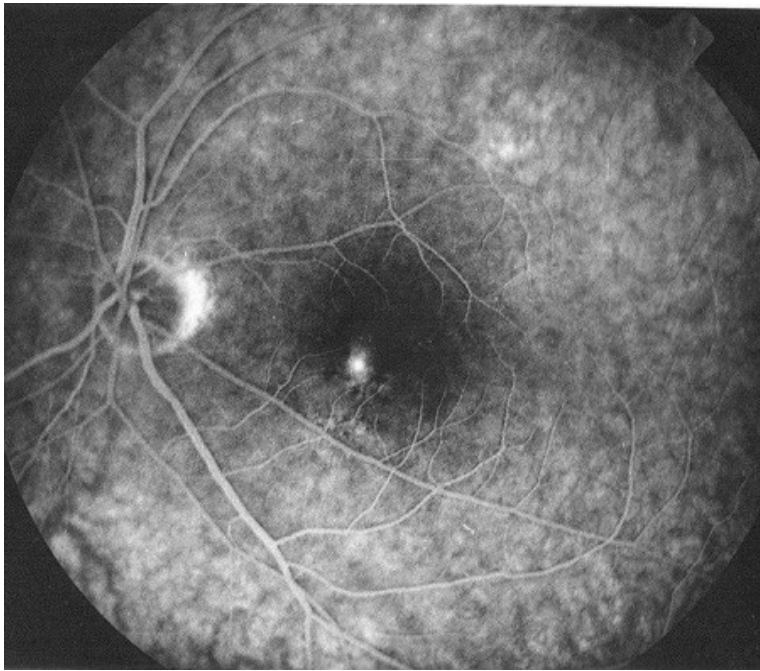
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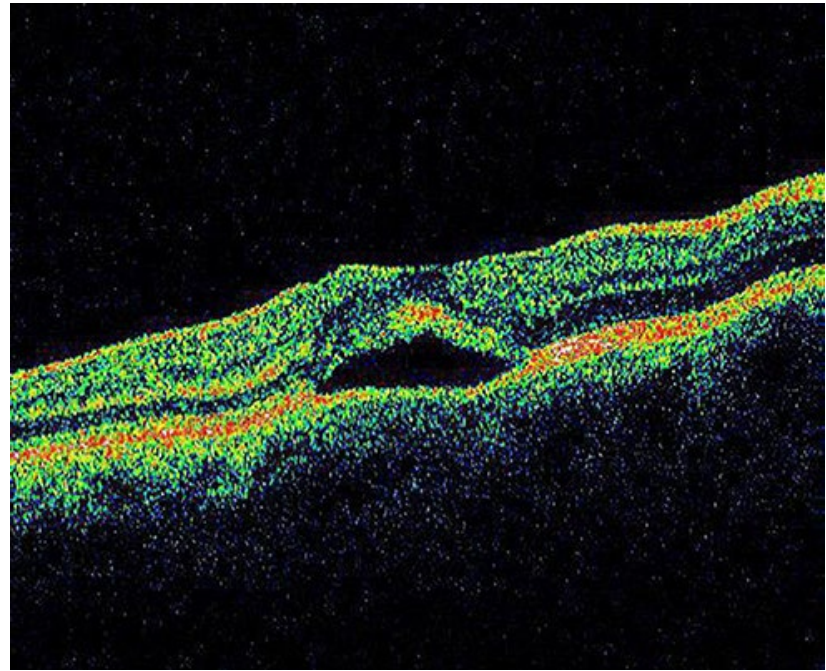
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Systemic Meds and Ocular Toxicity



FA



OCT

CSR-like finding in a sildenafil pt



Q

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Is this manifestation common, or rare?

PDE5 inhibitors, or just sildenafil?

Can other drugs in this class have this effect?

Are these effects reversible?

- Paracetamol
- Digitalis
- Yellow tinting of vision
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Is this manifestation common, or rare?

It is quite rare

Are other PDE5 inhibitors, or just sildenafil?

Only sildenafil can have this effect

Are the effects reversible?

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Can other PDE5 inhibitors have this effect?

What med is the classic cause of CSCR?

It is

Are these effects reversible?

- Yellow tinting of vision
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(You've probably never heard of it--I know I hadn't.)

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MEK inhibitors

- Yellow tinting of vision
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What are MEK inhibitors used to treat?

- Yellow tinting of vision
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Metastatic cancer

- Yellow tinting of vision
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What does MEK stand for in this context?

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What is MEK inhibitor-associated retinopathy called?

Sildenafil has another, unrelated ocular effect
It can cause serous retinal detachments, mimicking
central serous chorioretinopathy (CSCR)

Is there a classic cause of CSCR?
It is
Corticosteroids

What (other) med is yet another cause of CSCR?
(You've probably never heard of it—I know)

MEK inhibitors

What are MEK inhibitors used to treat?
Metastatic cancer



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Systemic Meds and Ocular Toxicity

- Chlorpromazine (Thorazine)
 - Thioridazine (Mellaril)
 - Tamoxifen
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- **Blue tinting of vision**
 - Retinopathy rare at doses >100 mg/d

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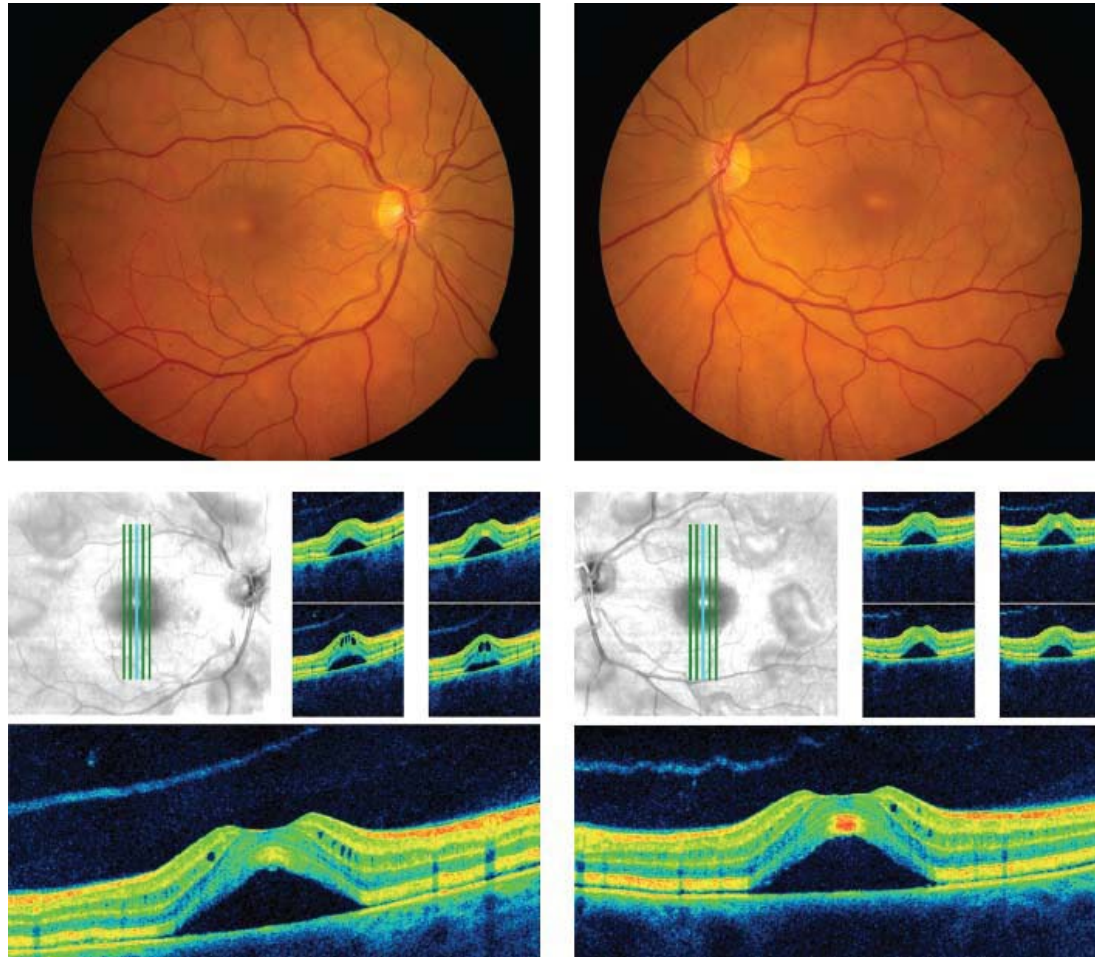
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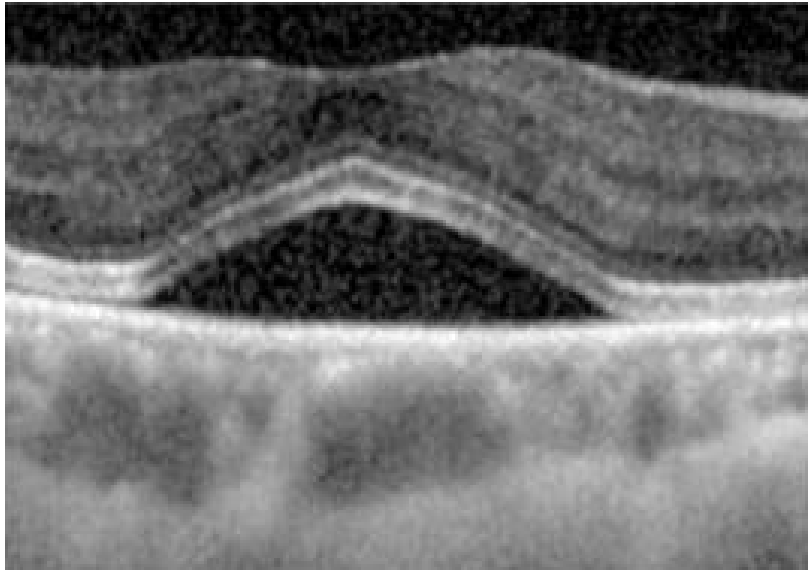
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Systemic Meds and Ocular Toxicity

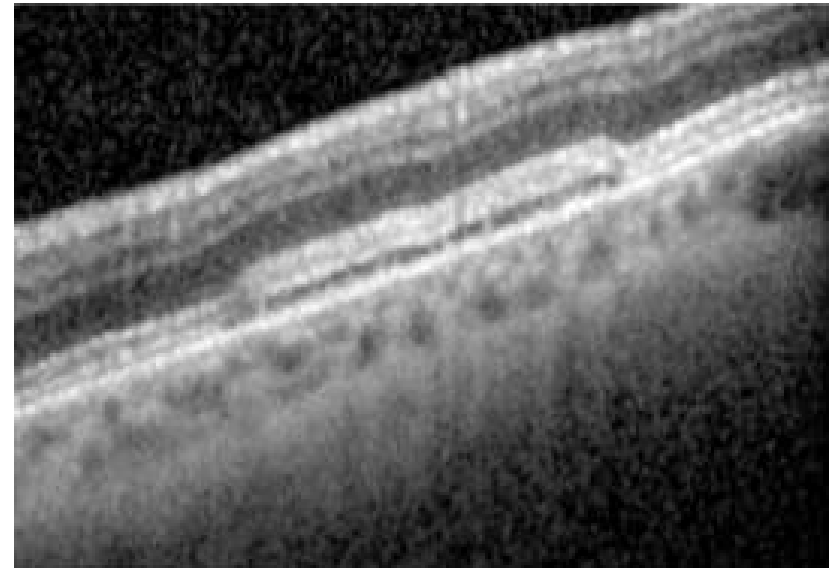


MEK toxicity. Patient reported decreased vision 3 weeks after starting a MEK inhibitor for metastatic cutaneous melanoma. Fundus photos and OCT images demonstrate multifocal serous detachments involving the fovea and around the arcades.

Systemic Meds and Ocular Toxicity



Dome configuration



Caterpillar configuration

CSR-like findings in a MEKAR



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**So when faced with a pt with apparent CSCR,
be sure to inquire about three meds:**

- Steroids**
- Sildenafil**
- MEK inhibitors**

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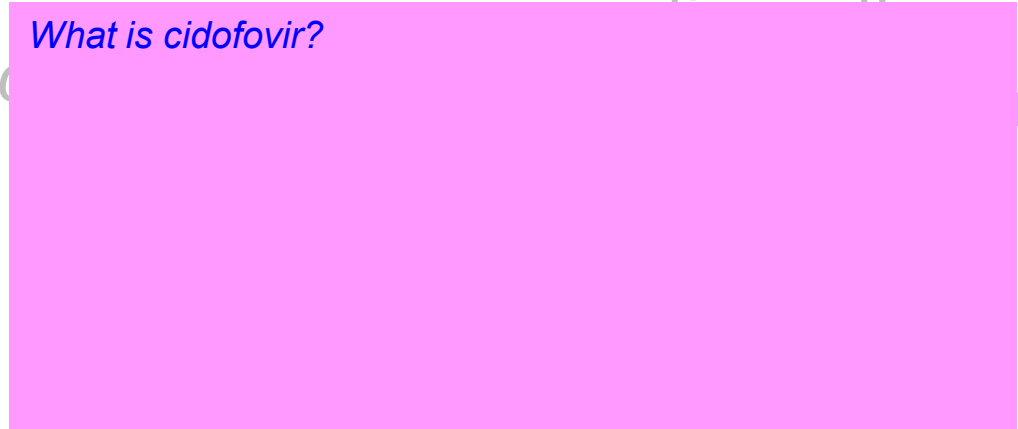


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It occurs in roughly 25% of cases



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What is Accutane used to treat?



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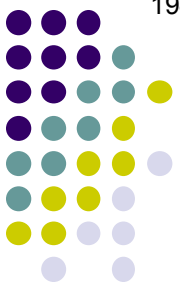


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Systemic Meds and Ocular Toxicity



Rifabutin-associated uveitis with hypopyon



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Mycobacterium avium complex infections in AIDS pts

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- Iritis, hypotony can develop
- Causes a crystalline

What is rifabutin used to treat?

Mycobacterium avium complex infections in AIDS pts

How long after initiation of treatment does the uveitis typically occur?

vision

**Causes uveitis
with hypopyon**



A

Systemic Meds and Ocular Toxicity

- Chlorpromazine (Thorazine)
- Thioridazine (Mellaril)
- Tamoxifen
- Sildenafil (Viagra)
- Cidofovir
- Isotretinoin (Accutane)
- **Rifabutin**
- Digitalis

- Blue tinting of vision
- Retinopathy rare at doses <800 mg/d
- Blair Witch cataract
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- Causes a crystalline

What is rifabutin used to treat?

Mycobacterium avium complex infections in AIDS pts

How long after initiation of treatment does the uveitis typically occur?

Weeks to months

vision

Causes uveitis with hypopyon



Q

Systemic Meds and Ocular Toxicity

- *Chlorpromazine (Thorazine)*
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 - *Digitalis?*
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 - Causes nyctalopia
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-



A

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Q

Systemic Meds and Ocular Toxicity

- *Chlorpromazine (Thorazine)*
 - *Thioridazine (Mellaril)*
 - *Tamoxifen*
- In general (and non-technical) terms, what sort of drug is alkyl nitrite?
- Blue tinting of vision
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- *Digitalis*
 - *Alkyl nitrite*



A

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In general (and non-technical) terms, what sort of drug is alkyl nitrite?

A recreational one



Q

Systemic Meds and Ocular Toxicity

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What is its street name?



Q/A

Systemic Meds and Ocular Toxicity

- *Chlorpromazine (Thorazine)*
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- In general (and non-technical) terms, what sort of drug is alkyl nitrite?
A recreational one
- What is its street name?
It has many, but the OGs of the BCSC refer to it as [REDACTED]
- *Digitalis*
 - *Alkyl nitrite*
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What is its street name?

It has many, but the OGs of the BCSC refer to it as *poppers*



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What two desired effects does alkyl nitrite have on the user?

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--It induces euphoria
--It relaxes smooth muscles
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 - *Alkyl nitrite*



Systemic Meds and Ocular Toxicity

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It has many, but the OG

What two desired effects

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Relaxes smooth muscle...What's recreational about that?

a crystalline
thy

nyctalopia

Yellow tinting of vision

Causes uveitis with hypopyon

● Digitalis

● Alkyl nitrite



Q/A

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Relaxes smooth muscle...What's recreational about that? This effect is considered desirable in preparation for certain activities, and it is in this context that the drug is typically used

a crystalline
hy
nyctalopia

- **relaxes smooth muscles**
- Digitalis
- Alkyl nitrite
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a crystalline
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 What negative impact can it have on the eyes?
 It can cause a toxic maculopathy

a crystalline
 hy
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- **relaxes smooth muscles**
- Digitalis
- Alkyl nitrite
- Yellow tinting of vision
- Causes uveitis with hypopyon
- Toxic maculopathy



Q

Systemic Meds and Ocular Toxicity

- Chlorpromazine (Thorazine)
- Thioridazine (Mellaril)
- Tamoxifen
- Blue tinting of vision
- Retinopathy rare at low doses

Is alkyl nitrite-associated maculopathy common, or rare?

In general (and non-technical) terms, what is an alkyl nitrite?
 A recreational one

What is its street name?
 It has many, but the OG is 'Poppers'

What two desired effects does it have?
 --It induces euphoria
 --It relaxes smooth muscles

Relaxes smooth muscles
 This effect is common in sexual activities, typically used

What negative impact can it have on the eyes?
 It can cause a toxic maculopathy

- Digitalis
- Alkyl nitrite
- Yellow tinting of vision
- Causes uveitis with hypopyon
- Toxic maculopathy

nyctalopia

act
an
line



A

Systemic Meds and Ocular Toxicity

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- Tamoxifen
- Blue tinting of vision
- Retinopathy rare at 1000 mg/d

Is alkyl nitrite-associated maculopathy common, or rare?
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Is alkyl nitrite-associated maculopathy common, or rare?
Rare

What will the pt typically complain of?

In general (and non-technical) terms, what is an alkyl nitrite?
A recreational one

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Is alkyl nitrite-associated maculopathy common, or rare?
Rare

What will the pt typically complain of?
A central scotoma

In general (and non-technical) terms, what is an alkyl nitrite?
A recreational one

What is its street name?
It has many, but the OG is 'Poppers'

What two desired effects does it have?
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Systemic Meds and Ocular Toxicity

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- Tamoxifen
- Blue tinting of vision
- Retinopathy rare at low doses

Is alkyl nitrite-associated maculopathy common, or rare?
Rare

What will the pt typically complain of?
A central scotoma

What does OCT reveal?

In general (and non-technical) terms, what is an alkyl nitrite?
A recreational one

What is its street name?
It has many, but the OG is 'Poppers'

What two desired effects does it have?
--It induces euphoria
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Relaxes smooth muscles
This effect is common in sexual activities, typically used

What negative impact can it have on the eyes?
It can cause a toxic maculopathy

- Digitalis
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Q/A

Systemic Meds and Ocular Toxicity

- Chlorpromazine (Thorazine) ● Blue tinting of vision

- Thioridazine (Mellaril) ● Retinopathy rare at 1000 mg/d

- Tamoxifen

Is alkyl nitrite-associated maculopathy common, or rare?
Rare

What will the pt typically complain of?
A central scotoma

What does OCT reveal?
Damage to foveolar cones manifesting as disruption of the macula zone

In general (and non-technical) terms, what is an alkyl nitrite?
A recreational one

What is its street name?
It has many, but the OG is "poppers"

What two desired effects does it have?
--It induces euphoria
--It relaxes smooth muscles

Relaxes smooth muscles
This effect is common in sexual activities, typically used to enhance performance

What negative impact can it have on the eyes?
It can cause a **toxic maculopathy**

- Digitalis ● Yellow tinting of vision

- Alkyl nitrite ● Causes uveitis with hypopyon

Toxic maculopathy

nyctalopia

line

act an



A

Systemic Meds and Ocular Toxicity

- Chlorpromazine (Thorazine)
- Thioridazine (Mellaril)
- Tamoxifen
- Blue tinting of vision
- Retinopathy rare at 1000 mg/d

Is alkyl nitrite-associated maculopathy common, or rare?
Rare

What will the pt typically complain of?
A central scotoma

What does OCT reveal?
Damage to foveolar cones manifesting as disruption of the ellipsoid zone

In general (and non-technical) terms, what is an alkyl nitrite?
A recreational one

What is its street name?
It has many, but the OG is 'Poppers'

What two desired effects does it have?
--It induces euphoria
--It relaxes smooth muscles

Relaxes smooth muscles
This effect is common in sexual activities, typically used for PDE5 inhibitors

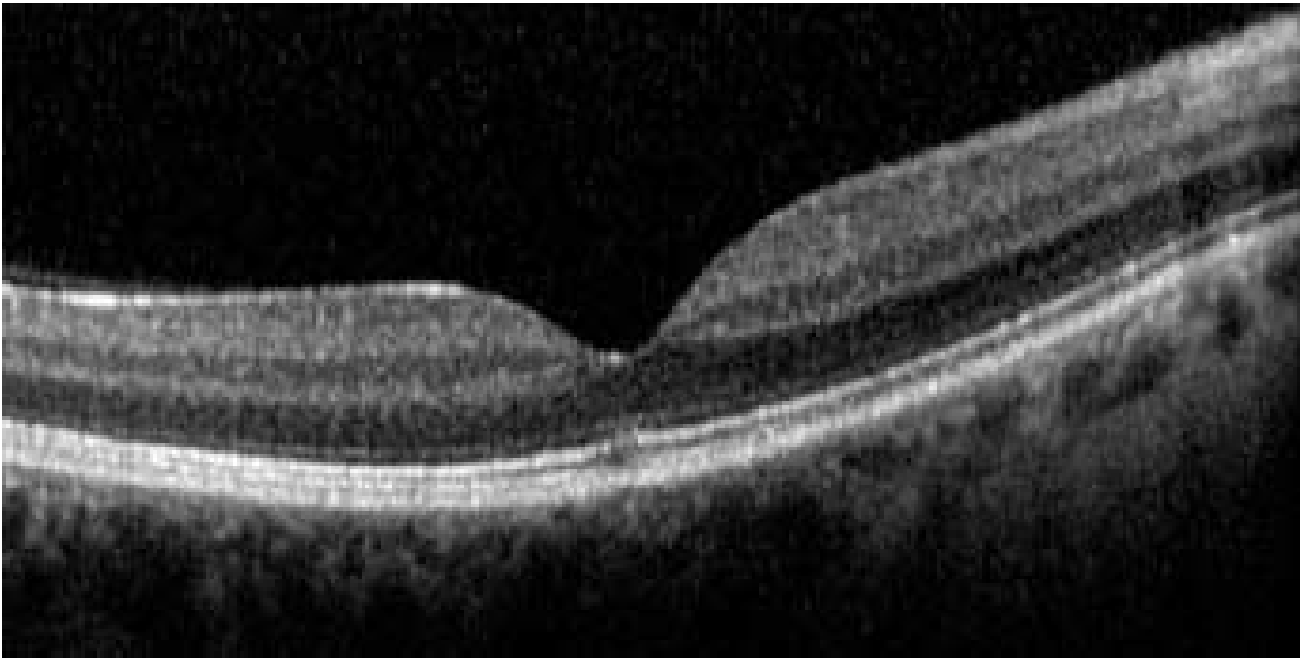
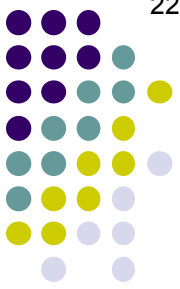
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nyctalopia

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Systemic Meds and Ocular Toxicity



SD-OCT shows maculopathy in the eye of a patient with a 10-day history of a 'central white spot' that developed after inhalation of an alkyl nitrite ("popper") for recreational purposes. Note the ellipsoid-zone disruption.