In general terms, what is the pathophysiology of CSC?
In general terms, what is the pathophysiology of CSC?

Choroidal hyperpermeability → serous retinal detachment → visual dysfunction

(not yet) → three words → visual dysfunction

Answer this one first--what directly causes visual dysfunction in CSC?
Central Serous Chorioretinopathy/Choroidopathy (CSC)

In general terms, what is the pathophysiology of CSC?

- Choroidal hyperpermeability
- Serous retinal detachment
- Visual dysfunction

Answer this one first--what directly causes visual dysfunction in CSC?
Central Serous Chorioretinopathy/Choroidopathy (CSC)

CSC: Serous RD
In general terms, what is the pathophysiology of CSC?

- Choroidal hyperpermeability
- → serous retinal detachment
- → visual dysfunction

Now this one--what causes the serous RD?
In general terms, what is the pathophysiology of CSC?
Choroidal hyperpermeability $\rightarrow$ serous retinal detachment $\rightarrow$ visual dysfunction
+ leakage at level of RPE

Now this one--what causes the serous RD?
Central Serous Chorioretinopathy/Choroidopathy (CSC)

In general terms, what is the pathophysiology of CSC?

Choriocapillaris hyperpermeability $\rightarrow$ serous retinal detachment $\rightarrow$ visual dysfunction $+$ leakage at level of RPE

Now this one--what causes the serous RD?

(Choriocapillaris hyperpermeability works too, and might even be technically more correct)
Central Serous Chorioretinopathy/Choroidopathy (CSC)

Specific visual complaints in CSC:

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

*In general terms, what is the pathophysiology of CSC?*
Choroidal hyperpermeability → serous retinal detachment → visual dysfunction
+ leakage at level of RPE
Central Serous Chorioretinopathy/Choroidopathy (CSC)

- Specific visual complaints in CSC:
  - Decreased VA
  - Metamorphopsia
  - Micropsia
  - Scotomata
  - Altered color vision

*In general terms, what is the pathophysiology of CSC?*
Choroidal hyperpermeability → serous retinal detachment → **visual dysfunction**
+ leakage at level of RPE
Is the loss of Snellen acuity usually mild, or severe?

Increased VA

Central Serous Chorioretinopathy/Choroidopathy (CSC)

In general terms, what is the pathophysiology of CSC?

Choroidal hyperpermeability → serous retinal detachment → visual dysfunction

+ leakage at level of RPE
Central Serous Chorioretinopathy/Choroidopathy (CSC)

Specific visual complaints in CSC:
- Decreased VA
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- Micropsia
- Scotomata
- Altered color vision

Is the loss of Snellen acuity usually mild, or severe?
Mild

What is the typical range of Snellen acuity, and the typical value?
The range is 20/20 - 20/200; the typical value is 20/30 or better

A refractive shift may contribute to the decreased VA. If present, what sort of refractive shift is typical?
A hyperopic shift

Why a hyperopic shift?
Because the submacular fluid elevates the fovea, shortening the effective axial length of the eye, thus rendering it more hyperopic

In general terms, what is the pathophysiology of CSC?
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Why a hyperopic shift?

In general terms, what is the pathophysiology of CSC?
Choroidal hyperpermeability → serous retinal detachment → visual dysfunction
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- Why a hyperopic shift? Because the submacular fluid elevates the fovea, shortening the effective axial length of the eye and rendering it more hyperopic

In general terms, what is the pathophysiology of CSC? Choroidal hyperpermeability → serous retinal detachment → visual dysfunction → leakage at level of RPE
Central Serous Chorioretinopathy/Choroidopathy (CSC)

Specific visual complaints in CSC:

- Decreased VA
- **Metamorphopsia**
- **Micropsia**
- Scotomata
- Altered color vision

*What do the terms metamorphopsia and micropsia mean?*

In general terms, what is the pathophysiology of CSC?

Choroidal hyperpermeability → serous retinal detachment → visual dysfunction
+ leakage at level of RPE
Central Serous Chorioretinopathy/Choroidopathy (CSC)

- Specific visual complaints in CSC:
  - Decreased VA
  - Metamorphopsia
  - Micropsia
  - Scotomata
  - Altered color vision

What do the terms metamorphopsia and micropsia mean?
Metamorphopsia refers to a distortion in the shape of an object’s visual image.

In general terms, what is the pathophysiology of CSC?
Choroidal hyperpermeability → serous retinal detachment → visual dysfunction
+ leakage at level of RPE
Specific visual complaints in CSC:

- Decreased VA
- **Metamorphopsia**
- **Micropsia**
- Scotomata
- Altered color vision

*What do the terms metamorphopsia and micropsia mean? Metamorphopsia refers to a distortion in the shape of an object’s visual image. Micropsia occurs when an object appears to be smaller than its actual size.*

In general terms, what is the pathophysiology of CSC?

Choroidal hyperpermeability → serous retinal detachment → **visual dysfunction**

+ Leakage at level of RPE
Central Serous Chorioretinopathy/Choroidopathy (CSC)

- Specific visual complaints in CSC:
  - Decreased VA
  - Metamorphopsia
  - Micropsia
  - Scotomata
  - Altered color vision

- Classic CSC demographics:
  - Sex: ?
Specific visual complaints in CSC:
- Decreased VA
- Metamorphopsia
- Micropsia
- Scotomata
- Altered color vision

Classic CSC demographics:
- Sex: Male
Central Serous Chorioretinopathy/Choroidopathy (CSC)

- Specific visual complaints in CSC:
  - Decreased VA
  - Metamorphopsia
  - Micropsia
  - Scotomata
  - Altered color vision

- Classic CSC demographics:
  - Sex: Male

*What is the male:female ratio?*
Central Serous Chorioretinopathy/Choroidopathy (CSC)

- Specific visual complaints in CSC:
  - Decreased VA
  - Metamorphopsia
  - Micropsia
  - Scotomata
  - Altered color vision

- Classic CSC demographics:
  - Sex: Male

What is the male:female ratio? About 3:1
Central Serous Chorioretinopathy/Choroidopathy (CSC)

- Specific visual complaints in CSC:
  - Decreased VA
  - Metamorphopsia
  - Micropsia
  - Scotomata
  - Altered color vision

- Classic CSC demographics:
  - Sex: **Male**

*What is the male:female ratio?* 
*About 3:1*

3:1??!! I thought it was more like 10:1, or at least 6:1. What gives?
Central Serous Chorioretinopathy/Choroidopathy (CSC)

- Specific visual complaints in CSC:
  - Decreased VA
  - Metamorphopsia
  - Micropsia
  - Scotomata
  - Altered color vision

- Classic CSC demographics:
  - Sex: **Male**

**What is the male:female ratio?**

3:1??!! I thought it was more like 10:1, or at least 6:1. What gives?

It's true that early studies found ratios in the 6:1 to 10:1 range. However, upon further review it is clear that the early research heavily overrepresented males. So 3:1 it is.
Central Serous Chorioretinopathy/Choroidopathy (CSC)

- Specific visual complaints in CSC:
  - Decreased VA
  - Metamorphopsia
  - Micropsia
  - Scotomata
  - Altered color vision

- Classic CSC demographics:
  - Sex: Male
  - Age: ?
Central Serous Chorioretinopathy/Choroidopathy (CSC)

- **Specific visual complaints in CSC:**
  - Decreased VA
  - Metamorphopsia
  - Micropsia
  - Scotomata
  - Altered color vision

- **Classic CSC demographics:**
  - Sex: Male
  - Age: 35 – 55
Central Serous Chorioretinopathy/Choroidopathy (CSC)

- Specific visual complaints in CSC:
  - Decreased VA
  - Metamorphopsia
  - Micropsia
  - Scotomata
  - Altered color vision

- Classic CSC demographics:
  - Sex: Male
  - Age: 35 – 55

What diagnosis must you consider carefully before deciding an individual over 50 has CSC?
Central Serous Chorioretinopathy/Choroidopathy (CSC)

- Specific visual complaints in CSC:
  - Decreased VA
  - Metamorphopsia
  - Micropsia
  - Scotomata
  - Altered color vision

- Classic CSC demographics:
  - Sex: Male
  - Age: 35 – 55

What diagnosis must you consider carefully before deciding an individual over 50 has CSC?
Wet ARMD
Central Serous Chorioretinopathy/Choroidopathy (CSC)

- Specific visual complaints in CSC:
  - Decreased VA
  - Metamorphopsia
  - Micropsia
  - Scotomata
  - Altered color vision

- Classic CSC demographics:
  - Sex: Male
  - Age: 35 – 55
  - Racial predilection: ?
Central Serous Chorioretinopathy/Choroidopathy (CSC)

- Specific visual complaints in CSC:
  - Decreased VA
  - Metamorphopsia
  - Micropsia
  - Scotomata
  - Altered color vision

- Classic CSC demographics:
  - Sex: Male
  - Age: 35 – 55
  - Racial predilection: None
Specific visual complaints in CSC:
- Decreased VA
- Metamorphopsia
- Micropsia
- Scotomata
- Altered color vision

Classic CSC demographics:
- Sex: Male
- Age: 35 – 55
- Racial predilection: None
- General health: ?
Central Serous Chorioretinopathy/Choroidopathy (CSC)

- Specific visual complaints in CSC:
  - Decreased VA
  - Metamorphopsia
  - Micropsia
  - Scotomata
  - Altered color vision

- Classic CSC demographics:
  - Sex: Male
  - Age: 35 – 55
  - Racial predilection: None
  - General health: Good
Central Serous Chorioretinopathy/Choroidopathy (CSC)

- Specific visual complaints in CSC:
  - Decreased VA
  - Metamorphopsia
  - Micropsia
  - Scotomata
  - Altered color vision

- Classic CSC demographics:
  - Sex: Male
  - Age: 35 – 55
  - Racial predilection: None
  - General health: Good
  - Personality: ?
Central Serous Chorioretinopathy/Choroidopathy (CSC)

- Specific visual complaints in CSC:
  - Decreased VA
  - Metamorphopsia
  - Micropsia
  - Scotomata
  - Altered color vision

- Classic CSC demographics:
  - Sex: Male
  - Age: 35 – 55
  - Racial predilection: None
  - General health: Good
  - Personality: ‘Type A’
Central Serous Chorioretinopathy/Choroidopathy (CSC)

- Specific visual complaints in CSC:
  - Decreased VA
  - Metamorphopsia
  - Micropsia
  - Scotomata
  - Altered color vision

- Classic CSC demographics:
  - Sex: Male

What words are we looking for to clue us in we’re dealing with someone predisposed personality-wise to CSC?

- Personality: ‘Type A’
Central Serous Chorioretinopathy/Choroidopathy (CSC)

- Specific visual complaints in CSC:
  - Decreased VA
  - Metamorphopsia
  - Micropsia
  - Scotomata
  - Altered color vision

- Classic CSC demographics:
  - Sex: Male

What words are we looking for to clue us in we’re dealing with someone predisposed personality-wise to CSC?
- ‘Tense’
- ‘Driven’
- ‘Stressed’

- Personality: ‘Type A’
Central Serous Chorioretinopathy/Choroidopathy (CSC)

- Three leakage patterns seen on FA:
  - Most common: An **expansile dot** (aka **ink blot**)
Three leakage patterns seen on FA:

- Most common: An expansile dot (aka *ink blot*)
Central Serous Chorioretinopathy/Choroidopathy (CSC)

CSC: Expansile dot
Three leakage patterns seen on FA:

- Most common: An **expansile dot** (aka **ink blot**)
- Less common, but more classic:
Central Serous Chorioretinopathy/Choroidopathy (CSC)

- Three leakage patterns seen on FA:
  - Most common: An expansile dot (aka *ink blot*)
  - Less common, but more classic: Smokestack
Central Serous Chorioretinopathy/Choroidopathy (CSC)

CSC: Smokestack pattern
Three leakage patterns seen on FA:

- **Most common**: An expansile dot (aka *ink blot*)
- **Less common, but more classic**: *Smokestack*

**Central Serous Chorioretinopathy/Choroidopathy (CSC)**

*What is the shape of the classic smokestack pattern?*

*Smokestack*
Central Serous Chorioretinopathy/Choroidopathy (CSC)

Three leakage patterns seen on FA:

What is the shape of the classic smokestack pattern?
Um, a smokestack?

(aka *ink blot*)

Smokestack
Central Serous Chorioretinopathy/Choroidopathy (CSC)

Three leakage patterns seen on FA:

1. Most common: An expansile dot (aka *ink blot*).
2. Less common, but more classic: Smokestack.

*What is the shape of the classic smokestack pattern?* Um, a smokestack?

_Importantly, it is not smokestack-shaped. Rather, it is so named because the dye behaves as if it’s smoke billowing from a smokestack. And the Retina book provides a particular description of this behavior. What is it?_
Central Serous Chorioretinopathy/Choroidopathy (CSC)

- **Three leakage patterns seen on FA:**

  - *What is the shape of the classic smokestack pattern?*
  
  Um, a smokestack?

  *Importantly, it is not smokestack-shaped. Rather, it is so named because the dye behaves as if it’s smoke billowing from a smokestack. And the Retina book provides a particular description of this behavior. What is it?*
  
  ‘Tree shaped;’ ie, a narrow, trunk-like portion below with a spread-out, canopy-like portion above

(aka *ink blot*)

**Smokestack**
Central Serous Chorioretinopathy/Choroidopathy (CSC)

CSC: ‘Tree shaped’ FA pattern
Central Serous Chorioretinopathy/Choroidopathy (CSC)

Three leakage patterns seen on FA:

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- Less common, but more classic: *Smokestack*

What is the shape of the classic smokestack pattern? Um, a smokestack?

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_So, it’s a smokestack yielding a tree? Isn’t that a rather awkward mixing of metaphors?_
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So, it’s a smokestack yielding a tree? Isn’t that a rather awkward mixing of metaphors? What can I say--I’m just the messenger.
Central Serous Chorioretinopathy/Choroidopathy (CSC)

Three leakage patterns seen on FA:
- Most common: An *expansile dot* (aka *ink blot*)
- Less common, but more classic: *Smokestack*

What imaging technique has largely supplanted FA in diagnosing CSC?

OCT

Does OCT have any advantages as an imaging modality for CSC?

It does indeed. In addition to being noninvasive, OCT can reveal subtle amounts of subretinal fluid (SRF) and/or sub-RPE fluid that may be too scant to be detected via FA.

What is the typical appearance of CSC on OCT?

A sharply demarcated elevation of the neurosensory retina or RPE (or both) with an optically empty space beneath
Central Serous Chorioretinopathy/Choroidopathy (CSC)

- Three leakage patterns seen on FA:
  - Most common: An expansile dot (aka *ink blot*)
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CSC: OCT
Central Serous Chorioretinopathy/Choroidopathy (CSC)

CSC: OCT
Three leakage patterns seen on FA:

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**Central Serous Chorioretinopathy/Choroidopathy (CSC)**

What imaging technique has largely supplanted FA in diagnosing CSC?

OCT

Does OCT have any advantages as an imaging modality for CSC?

It does indeed. In addition to being noninvasive, OCT can reveal subtle amounts of subretinal fluid (SRF) and/or sub-RPE fluid that may be too scant to be detected via FA.

We will have more to say about the OCT appearance of CSC later in the slide-set

What is the typical appearance of CSC on OCT?

A sharply demarcated elevation of the neurosensory retina or RPE (or both) with an optically empty space beneath
Central Serous Chorioretinopathy/Choroidopathy (CSC)

- Three leakage patterns seen on FA:
  - Most common: An expansive dot (aka *ink blot*)
  - Less common, but more classic: Smokestack

- CSC pathophysiology in a nutshell:
  - Choroidal + altered RPE

(Note: this question recapitulates, for emphasis, info you should already know from earlier)
Central Serous Chorioretinopathy/Choroidopathy (CSC)

- Three leakage patterns seen on FA:
  - Most common: An expansions dot (aka ink blot)
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- CSC pathophysiology in a nutshell:
  - Choroidal hyperpermeability + altered RPE barrier function → serous retinal detachment

(Note: this question recapitulates, for emphasis, info you should already know from earlier)
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  - Most common: An expansile dot (aka *ink blot*)
  - Less common, but more classic: Smokestack

- CSC pathophysiology in a nutshell:
  - Choroidal hyperpermeability + altered RPE barrier function → serous retinal detachment

- Natural course of CSC:
  - 90% resorb spontaneously within time frame
Central Serous Chorioretinopathy/Choroidopathy (CSC)

- Three leakage patterns seen on FA:
  - Most common: An expansile dot (aka *ink blot*)
  - Less common, but more classic: Smokestack

- CSC pathophysiology in a nutshell:
  - Choroidal hyperpermeability + altered RPE barrier function → serous retinal detachment

- Natural course of CSC:
  - 90% resorb spontaneously within 6 months
Central Serous Chorioretinopathy/Choroidopathy (CSC)

- Three leakage patterns seen on FA:
  - Most common: An expansile dot (aka ink blot)
  - Less common, but more classic: Smokestack

- CSC pathophysiology in a nutshell:
  - Choroidal hyperpermeability + altered RPE barrier function → serous retinal detachment

- Natural course of CSC:
  - 90% resorb spontaneously within 6 months
  - Snellen VA usually returns to baseline vs remains poor
Central Serous Chorioretinopathy/Choroidopathy (CSC)

- Three leakage patterns seen on FA:
  - Most common: An **expansile dot** (aka *ink blot*)
  - Less common, but more classic: **Smokestack**

- CSC pathophysiology in a nutshell:
  - Choroidal **hyperpermeability** + altered RPE barrier function $\rightarrow$ serous retinal detachment

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  - 90% resorb spontaneously within 6 months
  - Snellen VA usually **returns to baseline**
Central Serous Chorioretinopathy/Choroidopathy (CSC)

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  - Most common: An expansile dot (aka *ink blot*)
  - Less common, but more classic: Smokestack

- CSC pathophysiology in a nutshell:
  - Choroidal hyperpermeability + altered RPE barrier function → serous retinal detachment

- Natural course of CSC:
  - 90% resorb spontaneously within 6 months
  - Snellen VA usually returns to baseline
  - Residual mild deficits common or uncommon
Central Serous Chorioretinopathy/Choroidopathy (CSC)

- Three leakage patterns seen on FA:
  - Most common: An *expansile dot* (aka *ink blot*)
  - Less common, but more classic: *Smokestack*

- CSC pathophysiology in a nutshell:
  - Choroidal *hyperpermeability* + altered RPE barrier function → serous retinal detachment

- Natural course of CSC:
  - 90% resorb spontaneously within 6 months
  - Snellen VA usually *returns to baseline*
    - Residual mild deficits *common*
Central Serous Chorioretinopathy/Choroidopathy (CSC)

- Three leakage patterns seen on FA:
  - Most common: An expansile dot (aka **ink blot**)
  - Less common, but more classic: **Smokestack**

- CSC pathophysiology in a nutshell:
  - Choroidal **hyperpermeability** + altered RPE barrier function \(\rightarrow\) **serous retinal detachment**

- Natural course of CSC:
  - 90% resorb spontaneously within **6 months**
  - Snellen VA usually **returns to baseline**
    - Residual mild deficits **common**
  - **50%** have recurrence
Central Serous Chorioretinopathy/Choroidopathy (CSC)

- Three leakage patterns seen on FA:
  - Most common: An expansile dot (aka *ink blot*)
  - Less common, but more classic: Smokestack

- CSC pathophysiology in a nutshell:
  - Choroidal hyperpermeability + altered RPE barrier function $\rightarrow$ serous retinal detachment

- Natural course of CSC:
  - 90% resorb spontaneously within 6 months
  - Snellen VA usually returns to baseline
    - Residual mild deficits common
  - 50% have recurrence
Still more re CSC: Management

- Assess for high levels of endogenous or exogenous can be a drug, or not
Central Serous Chorioretinopathy/Choroidopathy (CSC)

- Still more re CSC: **Management**
  - Assess for high levels of endogenous or exogenous corticosteroids
Central Serous Chorioretinopathy/Choroidopathy (CSC)

Still more re CSC: Management

- Assess for high levels of endogenous or exogenous corticosteroids

What is the classic cause of endogenous hypercortisolism?
Central Serous Chorioretinopathy/Choroidopathy (CSC)

- Still more re CSC: Management
  - Assess for high levels of **endogenous** or exogenous corticosteroids

What is the classic cause of endogenous hypercortisolism? Cushing syndrome
Central Serous Chorioretinopathy/Choroidopathy (CSC)

Still more re CSC: Management
- Assess for high levels of endogenous or exogenous corticosteroids

Which of these corticosteroid administration routes have been associated with CSC?
--PO?
--IV?
--Topical?
--Intra-articular?
--Intrasnal?
Central Serous Chorioretinopathy/Choroidopathy (CSC)

Still more re CSC: Management
- Assess for high levels of endogenous or exogenous corticosteroids

Which of these corticosteroid administration routes have been associated with CSC?
- PO!
- IV!
- Topical!
- Intra-articular!
- Intranasal!

All have been implicated in CSC
Central Serous Chorioretinopathy/Choroidopathy (CSC)

Still more re CSC: Management

- Assess for high levels of endogenous or exogenous corticosteroids

*Which of these corticosteroid administration routes have been associated with CSC?*

- PO!
- IV!
- Topical!
- Intra-articular!
- Intranasal!
- Intravitreal?

*All* have been implicated in CSC

*What about intravitreal steroids? Surely these can cause CSC as well?*
Still more re CSC: Management

- Assess for high levels of endogenous or exogenous corticosteroids

Which of these corticosteroid administration routes have been associated with CSC?
- PO!
- IV!
- Topical!
- Intra-articular!
- Intra-nasal!

_ALL_ have been implicated in CSC

What about intravitreal steroids? Surely these can cause CSC as well?
You’d think so, but no--there is no evidence that it does
Central Serous Chorioretinopathy/Choroidopathy (CSC)

Still more re CSC: Management

Assess for high levels of endogenous or exogenous corticosteroids

Corticosteroids are the classic cause of med-induced CSC, but two other meds are mentioned in the BCSC Retina book. What are they?
Central Serous Chorioretinopathy/Choroidopathy (CSC)

Still more re CSC: Management
- Assess for high levels of endogenous or exogenous corticosteroids

*Corticosteroids are the classic cause of med-induced CSC, but two other meds are mentioned in the BCSC Retina book. What are they? Sildenafil, and MEK inhibitors*
Central Serous Chorioretinopathy/Choroidopathy (CSC)

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Corticosteroids are the classic cause of med-induced CSC, but two other meds are mentioned in the BCSC Retina book. What are they? Sildenafil, and MEK inhibitors

What class of med is sildenafil?
Still more re CSC: Management

- Assess for high levels of endogenous or exogenous corticosteroids

Corticosteroids are the classic cause of med-induced CSC, but two other meds are mentioned in the BCSC Retina book. What are they?

Sildenafil, and MEK inhibitors

What class of med is sildenafil?
It is a phosphodiesterase-5 (PDE5) inhibitor
Central Serous Chorioretinopathy/Choroidopathy (CSC)

Still more re CSC: Management

- Assess for high levels of endogenous or exogenous corticosteroids

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- Sildenafil
- MEK inhibitors

What class of med is sildenafil?
It is a phosphodiesterase-5 (PDE5) inhibitor

How do PDE5 inhibitors cause CSC?
Central Serous Chorioretinopathy/Choroidopathy (CSC)

- Still more re CSC: Management
  - Assess for high levels of endogenous or exogenous corticosteroids

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What class of med is sildenafil?
It is a phosphodiesterase-5 (PDE5) inhibitor

How do PDE5 inhibitors cause CSC?
Probably by inducing dilation of the choroidal vasculature
Q

- Still more re CSC: Management
  - Assess for high levels of endogenous or exogenous corticosteroids

Corticosteroids are the classic cause of med-induced CSC, but two other meds are mentioned in the BCSC Retina book. What are they?

- Sildenafil and MEK inhibitors

What does MEK stand for in this context?

Corticosteroids are the classic cause, other meds are mentioned in the BCSC Retina book. Sildenafil and MEK inhibitors

MEK inhibitors

What does MEK stand for in this context?

Don't ask--it's complicated

What are MEK inhibitors (MEKIs) used to treat?

- Metastatic cancer

What is MEKi-associated retinopathy called?

It is called ‘MEKi-associated retinopathy’ (MEKAR)

How prevalent is MEKAR?

Very--estimates run as high as 90% of MEKi users will experience MEKAR

How visually significant is MEKAR?

Not very--most pts are asymptomatic, or only slightly affected

Is MEKAR an indication to stop the MEKi?

No
Central Serous Chorioretinopathy/Choroidopathy (CSC)

- Still more re CSC: Management
  - Assess for high levels of endogenous or exogenous corticosteroids

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Central Serous Chorioretinopathy/Choroidopathy (CSC)

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Is MEKAR an indication to stop the MEKi? No
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.
Central Serous Chorioretinopathy/Choroidopathy (CSC)

Still more re CSC: Management

Assess for high levels of endogenous or exogenous corticosteroids.

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Sildenafil and MEK inhibitors

MEK inhibitors

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Central Serous Chorioretinopathy/Choroidopathy (CSC)

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Central Serous Chorioretinopathy/Choroidopathy (CSC)

- Still more re CSC: Management
  - Assess for high levels of endogenous or exogenous corticosteroids

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  - Sildenafil and MEK inhibitors

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  - No
Still more re CSC: Management

Assess for high levels of endogenous or exogenous corticosteroids

Central Serous Chorioretinopathy/Choroidopathy (CSC)

So when faced with a pt with apparent CSCR, be sure to inquire about three meds:
--Steroids
--Sildenafil
--MEK inhibitors

What are MEK inhibitors (MEKs) used to treat?
Metastatic cancer

What is MEK-associated retinopathy called?
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Is MEKAR an indication to stop the MEK?
No
Central Serous Chorioretinopathy/Choroidopathy (CSC)

- Still more re CSC: Management
  - Assess for high levels of endogenous or exogenous corticosteroids

So when faced with a pt with apparent CSCR, be sure to inquire about three meds:
- Steroids
- Sildenafil
- MEK inhibitors

If the pt is not taking these meds, but s/he has evidence of extensive intraocular inflammation, the presence of bilateral serous RDs should cause what diagnosis to spring to mind?

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Very--estimates run as high as 90% of MEK users will experience MEKAR

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Is MEKAR an indication to stop the MEK?
No
Central Serous Chorioretinopathy/Choroidopathy (CSC)

Still more re CSC: Management

- Assess for high levels of endogenous or exogenous corticosteroids
- Steroids
- Sildenafil
- MEK inhibitors

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

If the pt is not taking these meds, but s/he has evidence of extensive intraocular inflammation, the presence of bilateral serous RDs should cause what diagnosis to spring to mind?

Vogt-Koyanagi-Harada dz

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Very--estimates run as high as 90% of MEK users will experience MEKAR

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Not very--most pts are asymptomatic, or only slight affected

Is MEKAR an indication to stop the MEK?
No
Central Serous Chorioretinopathy/Choroidopathy (CSC)

Still more re CSC: **Management**

- Assess for high levels of endogenous or exogenous corticosteroids
- Wait about [time frame] for spontaneous resolution
Central Serous Chorioretinopathy/Choroidopathy (CSC)

Still more re CSC: **Management**

- Assess for high levels of endogenous or exogenous **corticosteroids**
- Wait about **3 months** for spontaneous resolution
Still more re CSC: Management

- Assess for high levels of endogenous or exogenous corticosteroids
- Wait about **3 months** for spontaneous resolution

Why should intervention be considered at around the 3-month point?
Central Serous Chorioretinopathy/Choroidopathy (CSC)

Still more re CSC: Management

- Assess for high levels of endogenous or exogenous corticosteroids
- Wait about **3 months** for spontaneous resolution

*Why should intervention be considered at around the 3-month point?*
Because photoreceptor atrophy will begin to occur at this juncture
Central Serous Chorioretinopathy/Choroidopathy (CSC)

- Still more re CSC: Management
  - Assess for high levels of endogenous or exogenous corticosteroids
  - Wait about 3 months for spontaneous resolution
  - Reasons to treat sooner than 3 months:
    - Recurrence in eye with two words
Central Serous Chorioretinopathy/Choroidopathy (CSC)

- **Still more re CSC: Management**
  - Assess for high levels of endogenous or exogenous corticosteroids
  - Wait about **3 months** for spontaneous resolution
  - Reasons to treat sooner than 3 months:
    - Recurrence in eye with **previous deficit**
Central Serous Chorioretinopathy/Choroidopathy (CSC)

Still more re CSC: Management

- Assess for high levels of endogenous or exogenous corticosteroids
- Wait about 3 months for spontaneous resolution
- Reasons to treat sooner than 3 months:
  - Recurrence in eye with previous deficit
  - this reason has nothing to do with the current eye/episode
Central Serous Chorioretinopathy/Choroidopathy (CSC)

- Still more re CSC: **Management**
  - Assess for high levels of endogenous or exogenous corticosteroids
  - Wait about 3 months for spontaneous resolution
  - Reasons to treat sooner than 3 months:
    - Recurrence in eye with previous deficit
    - Decreased vision in fellow eye from previous episode
Central Serous Chorioretinopathy/Choroidopathy (CSC)

- **Still more re CSC: Management**
  - Assess for high levels of endogenous or exogenous corticosteroids
  - Wait about **3 months** for spontaneous resolution
  - Reasons to treat sooner than 3 months:
    - Recurrence in eye with *previous deficit*
    - **Decreased vision in fellow eye from previous episode**
    - Retinal changes
Central Serous Chorioretinopathy/Choroidopathy (CSC)

- Still more re CSC: **Management**
  - Assess for high levels of endogenous or exogenous corticosteroids
  - Wait about **3 months** for spontaneous resolution
  - Reasons to treat sooner than 3 months:
    - Recurrence in eye with previous deficit
    - Decreased vision in fellow eye from previous episode
    - **Cystic** retinal changes
Central Serous Chorioretinopathy/Choroidopathy (CSC)

- Still more re CSC: **Management**
  - Assess for high levels of endogenous or exogenous corticosteroids
  - Wait about **3 months** for spontaneous resolution
  - Reasons to treat sooner than 3 months:
    - Recurrence in eye with *previous deficit*
    - Decreased vision in fellow eye from previous episode
    - **Cystic** retinal changes
    - Widespread *abb.* changes
Still more re CSC: **Management**

- Assess for high levels of endogenous or exogenous corticosteroids
- Wait about **3 months** for spontaneous resolution
- Reasons to treat sooner than 3 months:
  - Recurrence in eye with previous deficit
  - Decreased vision in fellow eye from previous episode
  - **Cystic** retinal changes
  - Widespread **RPE** changes
Central Serous Chorioretinopathy/Choroidopathy (CSC)

Still more re CSC: **Management**

- Assess for high levels of endogenous or exogenous corticosteroids
- Wait about **3 months** for spontaneous resolution
- Reasons to treat sooner than 3 months:
  - Recurrence in eye with previous deficit
  - Decreased vision in fellow eye from previous episode
  - **Cystic** retinal changes
  - Widespread **RPE** changes
  - Occupational needs
Central Serous Chorioretinopathy/Choroidopathy (CSC)

Still more re CSC: **Management**

- Assess for high levels of endogenous or exogenous **corticosteroids**
- Wait about **3 months** for spontaneous resolution
- Reasons to treat sooner than 3 months:
  - Recurrence in eye with **previous deficit**
  - Decreased vision in fellow eye from previous episode
  - **Cystic** retinal changes
  - Widespread **RPE** changes
  - **Occupational** needs
Central Serous Chorioretinopathy/Choroidopathy (CSC)

Still more re CSC: **Management**

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- Wait about **3 months** for spontaneous resolution
- Reasons to treat sooner than 3 months:
  - Recurrence in eye with **previous deficit**
  - Decreased vision in fellow eye from previous episode
  - **Cystic** retinal changes
  - Widespread **RPE** changes
  - **Occupational** needs
- Treatment: **two words**
Central Serous Chorioretinopathy/Choroidopathy (CSC)

- Still more re CSC: **Management**
  - Assess for high levels of endogenous or exogenous corticosteroids
  - Wait about **3 months** for spontaneous resolution
  - Reasons to treat sooner than 3 months:
    - Recurrence in eye with previous deficit
    - Decreased vision in fellow eye from previous episode
    - **Cystic** retinal changes
    - Widespread **RPE** changes
    - **Occupational** needs
  - Treatment: **Photodynamic therapy**
Still more re CSR: Management

- Assess for high levels of endogenous or exogenous corticosteroids
- Wait about 3 months for spontaneous resolution
- Reasons to treat sooner than 3 months:
  - Recurrence in eye with previous deficit
  - Decreased vision in fellow eye from previous episode
  - Cystic retinal changes
  - Widespread RPE changes
  - Occupational needs

Treatment: Photodynamic therapy

What is photodynamic therapy?

Verteporfin

Central Serous Chorioretinopathy/Choroidopathy (CSC)
Central Serous Chorioretinopathy/Choroidopathy (CSC)

- Still more re CSR: Management
  - Assess for high levels of endogenous or exogenous corticosteroids
  - Wait about 3 months for spontaneous resolution

**What is photodynamic therapy?**
A form of phototherapy for vascular lesions, usually within the posterior segment of the eye

- Occupational needs
- Treatment: **Photodynamic therapy**
Central Serous Chorioretinopathy/Choroidopathy (CSC)

- Still more re CSR: Management
  - Assess for high levels of endogenous or exogenous corticosteroids
  - Wait about 3 months for spontaneous resolution
  - Reasons to treat sooner than 3 months:
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    - Decreased vision in fellow eye from previous episode
    - Cystic retinal changes
    - Widespread RPE changes
    - Occupational needs

Treatment: Photodynamic therapy

What is photodynamic therapy?
A form of phototherapy for vascular lesions, usually within the posterior segment of the eye

Briefly, how does it work?
Central Serous Chorioretinopathy/Choroidopathy (CSC)

- Still more re CSR: Management
  - Assess for high levels of endogenous or exogenous corticosteroids
  - Wait about 3 months for spontaneous resolution

What is photodynamic therapy?
A form of phototherapy for vascular lesions, usually within the posterior segment of the eye

Briefly, how does it work?
A light-sensitive chemical is injected intravenously, and time sufficient to allow concentration of the chemical in the lesion is allowed to pass. Light of the wavelength needed to activate the chemical is then delivered.

- Occupational needs
- Treatment: Photodynamic therapy
Still more re CSR: Management

- Assess for high levels of endogenous or exogenous corticosteroids
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A light-sensitive chemical is injected intravenously, and time sufficient to allow concentration of the chemical in the lesion is allowed to pass. Light of the wavelength needed to activate the chemical is then delivered. The chemical is stimulated to react with oxygen to create free radicals, which degrade the lesion by damaging its vasculature.

- Occupational needs
- Treatment: Photodynamic therapy
Central Serous Chorioretinopathy/Choroidopathy (CSC)

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What is the name of the infused chemical?

- Occupational needs
- Treatment: Photodynamic therapy
Still more re CSR: Management

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*What is the name of the infused chemical?*
Verteporfin

- Occupational needs

- Treatment: **Photodynamic therapy**
Central Serous Chorioretinopathy/Choroidopathy (CSC)

- Still more re CSC: Management
  - Assess for high levels of endogenous or exogenous corticosteroids
  - What about thermal laser? It is an effective treatment?
  - Decreased vision in fellow eye from previous episode
  - Cystic retinal changes
  - Widespread RPE changes
  - Occupational needs
  - Treatment: Thermal laser?
Central Serous Chorioretinopathy/Choroidopathy (CSC)

- Still more re CSC: Management
  - Assess for high levels of endogenous or exogenous corticosteroids
  - Wait about 3 months for spontaneous resolution
  - Reasons to treat sooner than 3 months:
    - Recurrence in eye with previous deficit
    - Decreased vision in fellow eye from previous episode
    - Cystic retinal changes
    - Widespread RPE changes
    - Occupational needs
  - Treatment: **Thermal laser? Meh**

*What about thermal laser? It is an effective treatment?*
Yes and no. Thermal laser does hasten fluid resorption, and thus facilitates faster visual recovery.

- Final visual acuity was no different between groups
- Recurrence rate was no different between groups

Inadvertent rupture of Bruch’s membrane leading to iatrogenic CNVM

Thermal laser? Meh
Central Serous Chorioretinopathy/Choroidopathy (CSC)

Still more re CSC: Management

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Treatment: Thermal laser? Meh

What about thermal laser? It is an effective treatment?
Yes and no. Thermal laser does hasten fluid resorption, and thus facilitates faster visual recovery. However, when studies compare treated vs untreated eyes:
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*What is the rare-but-devastating complication associated with thermal laser treatment?*

- Decreased vision in fellow eye from previous episode
- Cystic retinal changes
- Widespread RPE changes
- Occupational needs

Treatment: **Thermal laser? Meh**
Central Serous Chorioretinopathy/Choroidopathy (CSC)

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Treatment: Thermal laser? Meh
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  - Assess for high levels of endogenous or exogenous corticosteroids
  - Wait about 3 months for spontaneous resolution
  - Reasons to treat sooner than 3 months:
    - Recurrence in eye with previous deficit
    - Decreased vision in fellow eye from previous episode
    - Cystic retinal changes
    - Widespread RPE changes
    - Occupational needs
  - Treatment: Photodynamic therapy

What about thermal laser? It is an effective treatment?
Yes and no. Thermal laser does hasten fluid resorption, and thus facilitates faster visual recovery. However, when studies compare treated vs untreated eyes:
-- Final visual acuity was no different between groups
-- Recurrence rate was no different between groups

What is the rare-but-devastating complication associated with thermal laser treatment?
Inadvertent rupture of Bruch’s membrane leading to iatrogenic CNVM

Can CSC pts develop CNVM spontaneously?
Thermal laser? Meh
Central Serous Chorioretinopathy/Choroidopathy (CSC)

Still more re CSC: Management

- Assess for high levels of endogenous or exogenous corticosteroids

What about thermal laser? It is an effective treatment?
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Treatment: Thermal laser? Meh
Still more re CSC: Management

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Remember, the treatment of choice in most CSC cases is **observation**

- Treatment: **Photodynamic therapy**
Central Serous Chorioretinopathy/Choroidopathy (CSC)

- Differential for CSC:
  - Optic nerve pit
  - VKH
  - Wet ARMD
  - PED
  - Toxemia of pregnancy
  - Choroidal nevi
Central Serous Chorioretinopathy/Choroidopathy (CSC)

Differential for CSC:

- Optic nerve pit
- Vogt-Koyanagi-Harada (VKH) disease
- Wet age-related macular degeneration (ARMD)
- Pigment epithelial detachment (PED)
- Toxemia of pregnancy
- Choroidal nevi
- Polypoidal choroidal vasculopathy
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Central Serous Chorioretinopathy/Choroidopathy (CSC)

What is uveal effusion syndrome?

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What is uveal effusion syndrome?
An idiopathic condition is which abnormalities of scleral composition and/or thickness interfere with fluid movement across the scleral wall, resulting in two words thickening, abbreviations, and type of RD.

Uveal effusion syndrome
Central Serous Chorioretinopathy/Choroidopathy (CSC)

**What is uveal effusion syndrome?**
An idiopathic condition is which abnormalities of scleral composition and/or thickness interfere with fluid movement across the scleral wall, resulting in choroidal and ciliary body thickening, RPE alterations, and exudative RD.

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Idiopathic uveal effusion. A, Fundus photo demonstrates blunted foveal reflex and irregular, subtle subretinal deposits. B, Corresponding FA reveals a diffuse leopard-spot pattern of blocking with intervening window defects involving the entire posterior pole. C, OCT scan reveals a small amount of subfoveal fluid and outer retinal deposits. (Not shown is a peripheral serous RD). D, Fundus photo (from a different case) shows the typical appearance of serous RD as well as an underlying choroidal detachment (common for this condition).
Central Serous Chorio­retinopathy/Choroidopathy (CSC)

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Is there evidence of inflammation?
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**Uveal effusion syndrome**
Central Serous Chorioretinopathy/Choroidopathy (CSC)

Changing gears…

(No question yet)
Is it CSC or wet ARMD? An important distinction to make—can you make it?

(No question yet)
### Central Serous Chorioretinopathy/Choroidopathy (CSC)

**Changing gears…**

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Choose the appropriate test results for CSC and ARMD based on the information provided.
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Subfoveal choroidal thickness as measured from the outer border of the RPE to the inner border of the sclera (brackets). A, a healthy eye in a 55-year-old man. B-D, three eyes with CSC: A 44-year-old man (B); a 57-year-old man (C); and a 63-year-old man (D).
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*Choroidal thickness may not be readily interpretable on spectral-domain OCT (SD-OCT). What OCT modality is preferred for assessing the choroid?*
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Is it CSC or wet ARMD? An important distinction to make—can you make it?

In the context of CSC, what are descending tracts?

Long, narrow areas of RPE change extending inferiorly from the areas of SRF

Descending tracts are best visualized via what imaging modality?

Fundus autofluorescence (FAF)

What is the cause?

Gravity-dependent ‘dripping’ of the SRF

By what other name is this phenomenon known?

‘Guttering’
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### CSC Leak vs. ARMD Leak

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**Is it CSC or wet ARMD? An important distinction to make—can you make it?**

**Central Serous Chorioretinopathy/Choroidopathy (CSC)**

**In the context of CSC, what are descending tracts?**
Long, narrow areas of RPE change extending inferiorly from the areas of SRF

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Central Serous Chorioretinopathy/Choroidopathy (CSC)

CSC: Descending tracts/guttering (FAF images)
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For the CSC cases in which no CNVM is present: What clinical finding, common to both wet ARMD and CSC, is responsible for the misdiagnosis? The presence of SRF on OCT

What finding distinguishes SRF seen on OCT in CNVM from that seen in CSC?

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In CNVM there is usually a concomitant [two words], whereas this will not be present in CSC

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What finding distinguishes SRF seen on OCT in CNVM from that seen in CSC?
In CNVM there is usually a concomitant subretinal hemorrhage, whereas this will not be present in CSC
Central Serous Chorioretinopathy/Choroidopathy (CSC)

**ARMD**: PED (△) and SRF (↓), along with subretinal hemorrhage (*)

**CSC**: PED and SRF, but no hemorrhage