In general terms, what is the pathophysiology of CSC?
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- Choroidal hyperpermeability → serous retinal detachment → visual dysfunction

Answer this one first--what directly causes visual dysfunction in CSC?
In general terms, what is the pathophysiology of CSC?

→ serous retinal detachment → visual dysfunction

Answer this one first--what directly causes visual dysfunction in CSC?
In general terms, what is the pathophysiology of CSC?

Two words + four words and an abb. → serous retinal detachment → visual dysfunction

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

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

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

In general terms, what is the pathophysiology of CSC?
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**Central Serous Chorioretinopathy/Choroidopathy (CSC)**

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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**Q**

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A **hyperopic** shift

*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
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  - **Micropsia**
  - Scotomata
  - Altered color vision

*What do the terms metamorphopsia and micropsia mean?*

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

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

Specific visual complaints in CSC:
- Decreased VA
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- 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
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. **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: ?
Central Serous Chorioretinopathy/Choroidopathy (CSC)

- 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?
About 3:1

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: ?
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)
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: \textbf{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
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: ?
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**)
Central Serous Chorioretinopathy/Choroidopathy (CSC)

- Three leakage patterns seen on FA:
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Central Serous Chorioretinopathy/Choroidopathy (CSC)

CSC: Expansile dot
Central Serous Chorioretinopathy/Choroidopathy (CSC)

Three leakage patterns seen on FA:

- Most common: An **expansile dot** (aka *ink blot*)
- Less common, but more classic: one word
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
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 is the shape of the classic smokestack pattern? (aka *ink blot*)

**Smokestack**

*Tree shaped;* i.e., a narrow, trunk-like portion below with a spread-out, canopy-like portion above.
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 is the shape of the classic smokestack pattern?
Um, a smokestack?

Smokestack
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 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:

- Most common: An expansile dot (aka *ink blot*)
- 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?*  
‘Tree shaped;’ ie, a narrow, trunk-like portion below with a spread-out, canopy-like portion above
Central Serous Chorioretinopathy/Choroidopathy (CSC)

CSC: ‘Tree shaped’ FA pattern
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*

*So, it’s a smokestack yielding a tree? Isn’t that a rather awkward mixing of metaphors?*
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**

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Um, a smokestack?

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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*
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?

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

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- Most common: An expansile dot (aka *ink blot*)
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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?
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)

CSC: OCT
Central Serous Chorioretinopathy/Choroidopathy (CSC)

CSC: OCT
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- Most common: An expansile dot (aka *ink blot*)
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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 expansile 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)
A

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

(Note: this question recapitulates, for emphasis, info you should already know from earlier)
Q

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:
  - % 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 \(\rightarrow\) 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

Q
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*
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 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 $\rightarrow$ serous retinal detachment

- Natural course of CSC:
  - **90%** resorb spontaneously within **6 months**
  - Snellen VA usually **returns to baseline**
    - Residual mild deficits **common**
Three leakage patterns seen on FA:
- Most common: An expansile dot (aka *ink blot*)
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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
- % 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 → 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)

- 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?
--Intranasal?
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?
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
- Intravitreal? NO!

*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)

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?
Central Serous Chorioretinopathy/Choroidopathy (CSC)

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

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

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  - 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
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

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 MEK-associated retinopathy called?

It is called ‘MEK-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 slight 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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What are MEK inhibitors (MEKs) used to treat? Metastatic cancer

MEKi-associated retinopathy 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 slight affected

Is MEKAR an indication to stop the MEKi? No
Still more re CSC: Management

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

MEK inhibitors

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

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

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.
Still more re CSC: Management

- Assess for high levels of endogenous or exogenous corticosteroids

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

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

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

How prevalent is MEKAR?
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Still more re CSC: Management

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Central Serous Chorioretinopathy/Choroidopathy (CSC)

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Assess for high levels of endogenous or exogenous corticosteroids

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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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**Is MEKAR an indication to stop the MEK?**
Central Serous Chorioretinopathy/Choroidopathy (CSC)

Still more re CSC: Management

- Assess for high levels of endogenous or exogenous corticosteroids

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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

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
- Management

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

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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?
- Vogt-Koyanagi-Harada dz
Central Serous Chorioretinopathy/Choroidopathy (CSC)

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

- What are the other meds mentioned in the BCSC Retina book?
  - Sildenafil
  - 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 MEK-associated retinopathy called?
  - It is called ‘MEK-associated retinopathy’ (MEKAR)

- How prevalent is MEKAR?
  - Very--estimates run as high as 90% of MEK users will experience MEKAR

- How visually significant is MEKAR?
  - Not very--most pts are asymptomatic, or only slight affected

- Is MEKAR an indication to stop the MEK?
  - No

- 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?
  - Vogt-Koyanagi-Harada dz
Central Serous Chorioretinopathy/Choroidopathy (CSC)

Still more re CSC: **Management**

- Assess for high levels of endogenous or exogenous **corticosteroids**
- Wait about a **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 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**
  - 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: [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
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:
  - 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?
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. The chemical is stimulated to react with oxygen to create free radicals, which degrade the lesion and/or its vasculature.

What is the name of the infused chemical?
Verteporfin
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

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

  **Briefly, how does it work?**

  - 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?**
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.
Still more re CSR: Management

- Assess for high levels of endogenous or exogenous corticosteroids
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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?
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 [element] to create [two words], which degrade the lesion by damaging its vasculature.
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
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- Treatment: **Photodynamic therapy**
Still more re CSR: Management

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Treatment: Photodynamic therapy
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**?

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

- 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?
Yes and no. Thermal laser does hasten fluid resorption, and thus facilitates faster visual recovery.

- 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)

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. However, when studies compare treated vs untreated eyes:
- Final visual acuity was no different between groups
- Recurrence rate was no different between groups
Central Serous Chorioretinopathy/Choroidopathy (CSC)

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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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- **Recurrence rate** was no different between groups

- 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)

Still more re CSC: Management

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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?

- 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)

Still more re CSC: Management

- Assess for high levels of endogenous or exogenous corticosteroids
- Reason 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
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Treatment:

- Photodynamic therapy

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Inadvertent rupture of Bruch's membrane leading to iatrogenic CNVM
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? 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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- 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)

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
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Central Serous Chorioretinopathy/Choroidopathy (CSC)

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

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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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Central Serous Chorioretinopathy/Choroidopathy (CSC)

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

In the context of CSC, what are descending tracts?

Descending tracts present?

Yes

No

CSC

ARMD

Leak ≈ SRF

No

Yes

Yes

Yes

Thinner

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

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

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- **By what other name is this phenomenon known?**
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Central Serous Chorioretinopathy/Choroidopathy (CSC)

CSC: Descending tracts/guttering (FAF images)
**Central Serous Chorioretinopathy/Choroidopathy (CSC)**

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

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**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’
To be clear: Other than 2ndry to a break in Bruch’s 2ndry to laser tx (ie, iatrogenic CNVM), is CNVM associated with CSC? That is, can a CSC pt get a CNVM ‘just because’?

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The presence of SRF on OCT

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In CNVM there is usually a concomitant subretinal hemorrhage, whereas this will not be present in CSC

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

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