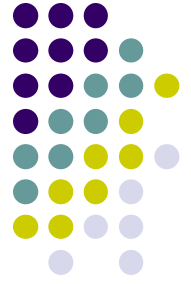


Q

Normal-Tension Glaucoma (NTG)



Define glaucoma.

A

Normal-Tension Glaucoma (NTG)



Define glaucoma.

Glaucoma is a group of optic neuropathies that present with progressive ONH damage and characteristic VF loss

Q

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Why isn't elevated IOP mentioned above?

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Normal-Tension Glaucoma (NTG)



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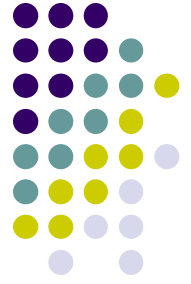
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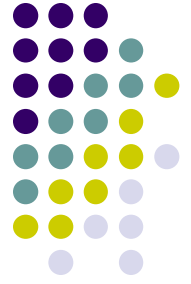
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In addition to being the strongest risk factor for glaucoma, IOP has another quality that renders it unique—what is it?

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It is the only risk factor that is **modifiable** in a manner proven to influence the risk of glaucoma progression

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That's why glaucoma management consists of IOP-lowering maneuvers!

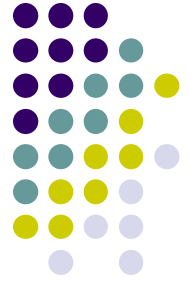
Q

Normal-Tension Glaucoma (NTG)

Glaucoma



The first thought you should have when encountering a pt you suspect has glaucoma is...



Q

Normal-Tension Glaucoma (NTG)



Glaucoma

Open-angle

*Closed- or
narrow-angle*

The first thought you should have when encountering a pt you suspect has glaucoma is...

What is the status of the angle?

How does one determine the status of the angle?

A

Normal-Tension Glaucoma (NTG)



Glaucoma

Open-angle

*Closed- or
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The first thought you should have when encountering a pt you suspect has glaucoma is...

What is the status of the angle?

How does one determine the status of the angle?

Gonioscopy. Don't assume your glaucoma pt has open angles—**prove** it by gonioing them!

Normal-Tension Glaucoma (NTG)



Glaucoma

Open-angle

***Closed- or
narrow-angle***

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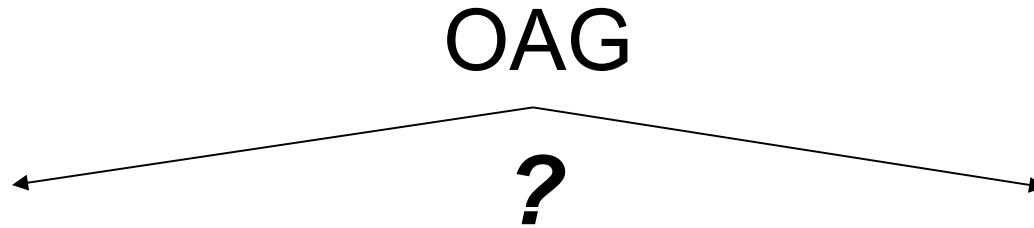
Gonioscopy

Angle-closure glaucoma is covered in multiple slide-sets; see the Table of Contents

ioing them!

Q

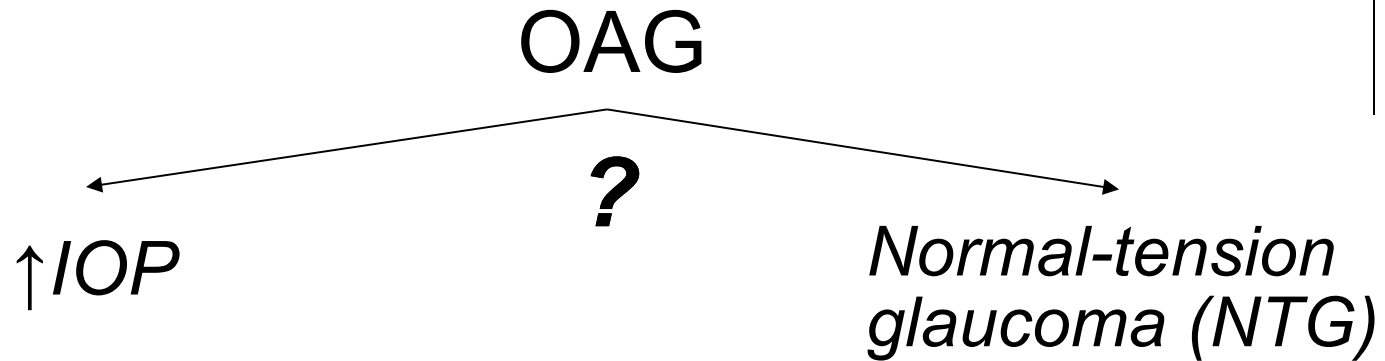
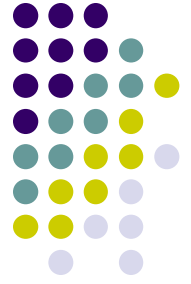
Normal-Tension Glaucoma (NTG)



Once you have determined your glaucoma pt has open angles,
the next 'first thought' is to ask...

A

Normal-Tension Glaucoma (NTG)

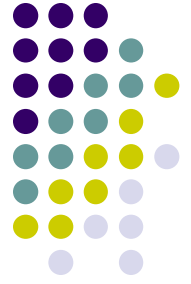


Once you have determined your glaucoma pt has open angles,
the next 'first thought' is to ask...

Is it high-tension OAG, or low (ie, 'normal') tension OAG?

Q

Normal-Tension Glaucoma (NTG)



OAG

↑ IOP

*Normal-tension
glaucoma (NTG)*

What IOP value is used to classify
glaucoma pts as high- vs normal-tension?

↑
Untreated IOP measurement
always above # mmHg

↑
Untreated IOP measurement
always at or below # mmHg

A

Normal-Tension Glaucoma (NTG)



OAG

↑ IOP

*Normal-tension
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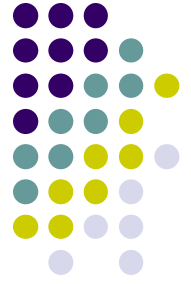
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*Normal-tension
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Why '21'? What's the justification for using this particular value as the cutoff?

Q/A

Normal-Tension Glaucoma (NTG)



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Normal-tension
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It's a statistical, not clinical, extrapolation. Back in the day, population studies
indicated that the mean IOP is #, with a standard deviation (SD) of #

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OAG

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Normal-Tension Glaucoma (NTG)



OAG

↑ IOP

Normal-tension
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Note that, because this definition of normal vs abnormal IOP is purely statistical, some glaucomologists reject the notion that NTG is a distinct disease entity!

Normal-Tension Glaucoma (NTG)



OAG

↑ IOP

Normal-tension
glaucoma (NTG)

What IOP value is used to classify
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Un a g
But other glaucoma docs argue that the NTG haters need to slow their roll, because in fact there are clinical differences between high-tension OAG and NTG (as we shall soon see...)

Why '21'? What's the justification for using this particular value as the cutoff?

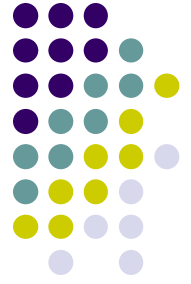
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Normal-Tension Glaucoma (NTG)

vs High-Tension Glaucoma: T/F



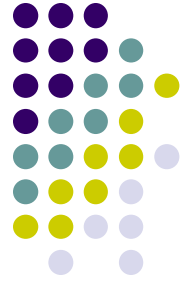
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Normal-Tension Glaucoma (NTG)

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When compared to high-tension glaucoma pts:

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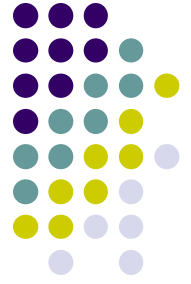
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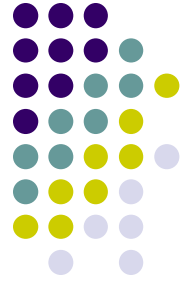
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Normal-Tension Glaucoma (NTG)
vs High-Tension Glaucoma: T/F



Disc hemorrhage in NTG

Q

Normal-Tension Glaucoma (NTG)

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- NTG pts are ^{more} ~~less~~ likely to have **optic disc hemorrhages** ~~F~~ **T**

In the context of NTG, are disc hemorrhages a finding of clinical significance (other than as evidence supporting the NTG diagnosis)?

A

Normal-Tension Glaucoma (NTG)

vs High-Tension Glaucoma: T/F



When compared to high-tension glaucoma pts:

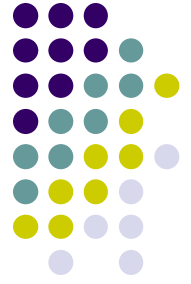
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In the context of NTG, are disc hemorrhages a finding of clinical significance (other than as evidence supporting the NTG diagnosis)?
Yes. Disc hemorrhages are worrisome in that they indicate the glaucoma is progressing.

Q

Normal-Tension Glaucoma (NTG)

vs High-Tension Glaucoma: T/F



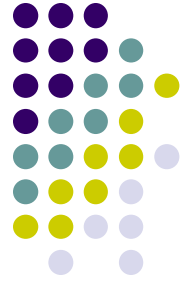
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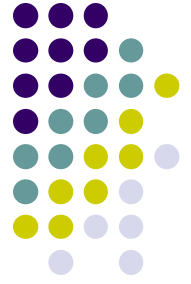
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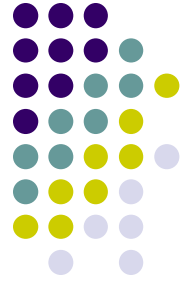
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Does this mean syphilis testing plays no role in evaluating NTG?

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Normal-Tension Glaucoma (NTG)

vs High-Tension Glaucoma: T/F



When compared to high-tension glaucoma pts:

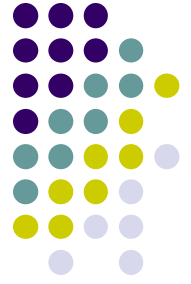
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*Does this mean syphilis testing plays no role in evaluating NTG?
To the contrary—some experts perform syphilis testing routinely during the initial evaluation of a possible NTG case*

Q

Normal-Tension Glaucoma (NTG)

vs High-Tension Glaucoma: T/F



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Normal-Tension Glaucoma (NTG)

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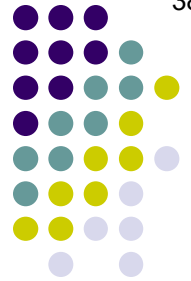
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Normal-Tension Glaucoma (NTG)

vs High-Tension Glaucoma: T/F



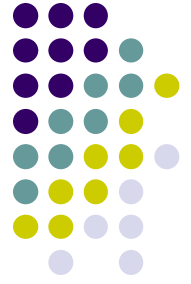
Image of NTG patient's hand. Erythema demonstrates hyperemic phase of Raynaud's, which usually follows vasospasm and reversible ischemia of peripheral arterioles.



Q

Normal-Tension Glaucoma (NTG)

vs High-Tension Glaucoma: T/F



When compared to high-tension glaucoma pts:

- Some studies indicate NTG pts are more likely to be **migraineurs**
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The increased prevalence of these conditions in the NTG population converges with the fact that **two words** may play a role in NTG

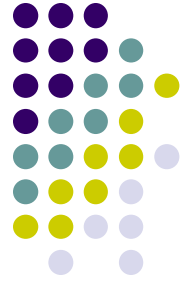
migraineurs

Raynaud's

A

Normal-Tension Glaucoma (NTG)

vs High-Tension Glaucoma: T/F



When compared to high-tension glaucoma pts:

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migraineurs

Raynaud's

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Normal-Tension Glaucoma (NTG)

vs High-Tension Glaucoma: T/F



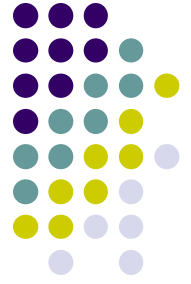
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- Some studies indicate NTG pts have a higher rate of Raynaud's **T**
- VF defects in NTG tend to be more peripheral and diffuse

A

Normal-Tension Glaucoma (NTG)

vs High-Tension Glaucoma: T/F



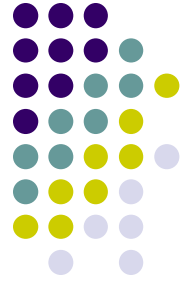
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Normal-Tension Glaucoma (NTG)

vs High-Tension Glaucoma: T/F

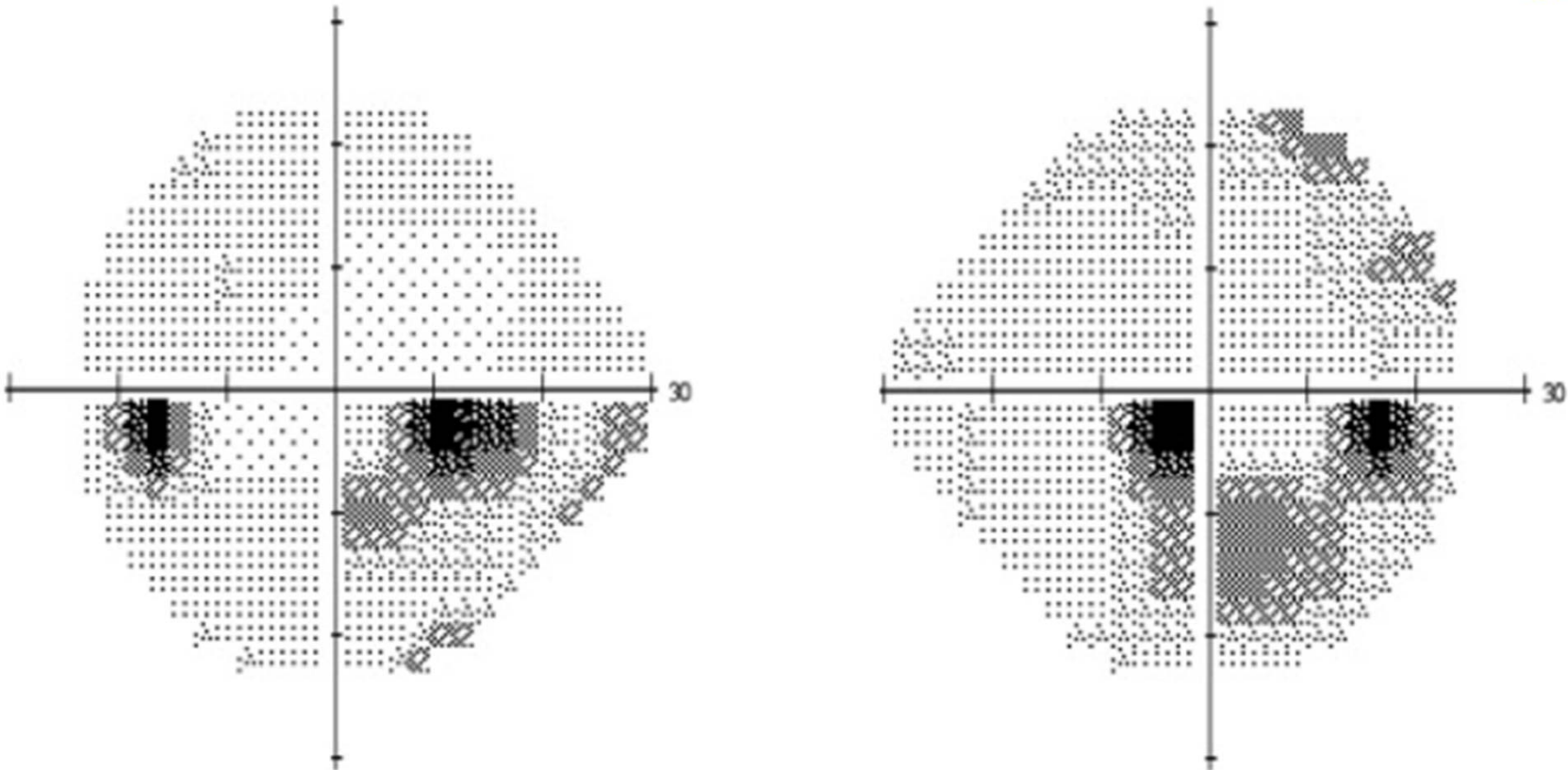


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Normal-Tension Glaucoma (NTG)

vs High-Tension Glaucoma: T/F



Standard automated perimetry in a patient with normal tension glaucoma. Note the dense inferior arcuate scotomas occurring near fixation with minimal involvement of periphery.

Q

Normal-Tension Glaucoma (NTG)

vs High-Tension Glaucoma: T/F



When compared to high-tension glaucoma pts:

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A

Normal-Tension Glaucoma (NTG)

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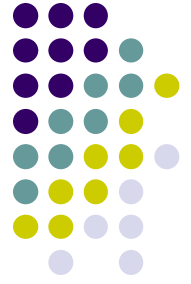
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Q

Normal-Tension Glaucoma (NTG)

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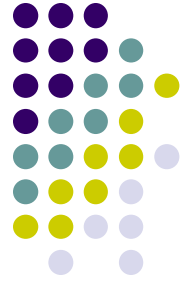
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- Some studies indicate NTG pts are more likely to suffer with an autoimmune disease

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Normal-Tension Glaucoma (NTG)

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Q

Normal-Tension Glaucoma (NTG)

You have a pt with ONH and VF changes c/w glaucomatous optic neuropathy (GON), but at every exam, her IOP is never high. **What tops your DDX?**

DDx

-- ?



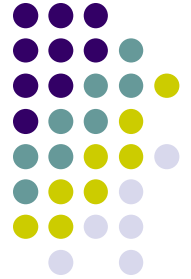
A

Normal-Tension Glaucoma (NTG)

You have a pt with ONH and VF changes c/w glaucomatous optic neuropathy (GON), but at every exam, her IOP is never high. **What tops your DDX?**

DDx

--Duh, it's NTG





Q

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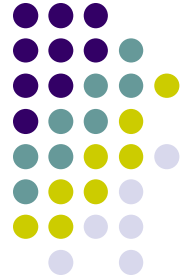
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-- ?

(Before you start answering—check the prompt on the next slide)

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-- ?



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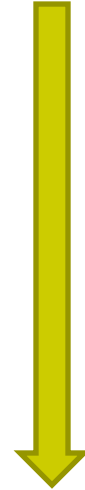
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(Note: These are **not** specific diseases or conditions; rather, they are general sorts of situations that might result in a pt presenting with **consistently normal IOP** and **apparent GON**.)

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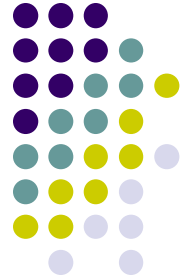
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Other than instrumentation error, what factor is most likely to account for an artifactually low applanation IOP measurement?



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*Other than instrumentation error, what factor is most likely to account for an artifactually low applanation IOP measurement?
A thinner-than-normal central corneal thickness*



Q

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We know a 'naturally' thin CCT will produce an artifactually-low applanation IOP. Is the same true for an iatrogenically thin cornea, ie, one that is s/p laser keratorefractive surgery for myopia?



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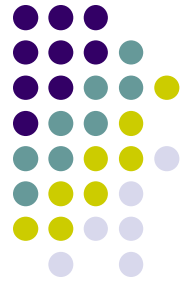
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Yes



Q

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What is the most likely cause of IOP suppression in an 'untreated' (note the quotes) pt?



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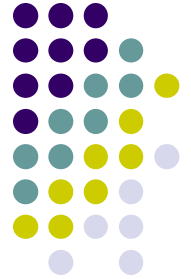
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What is the most likely cause of IOP suppression in an 'untreated' (note the quotes) pt?
Systemic treatment of HTN with a β blocker

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Q

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What are some of the causes of intermittent IOP elevation in a pt with open angles?

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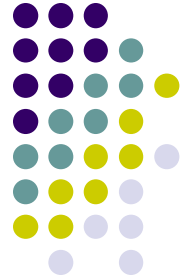
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What are some of the causes of intermittent IOP elevation in a pt with open angles?

- Diurnal IOP variation in high-tension OAG
- Posner-Schlossman syndrome



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What is the range of diurnal variation typical of nonglaucomatous eyes?

--Diurnal IOP variation in high-tension OAG

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What is the range of diurnal variation typical of nonglaucomatous eyes?
2 to 6 mmHg

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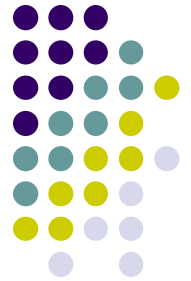
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*What is the range of diurnal variation typical of nonglaucomatous eyes?
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Is there a relationship between IOP and the degree of fluctuation?

--**Diurnal IOP variation in high-tension OAG**

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Q/A

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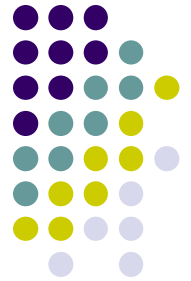
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Yes—the higher the IOP, the the amount of variation

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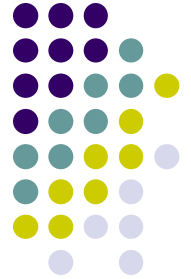
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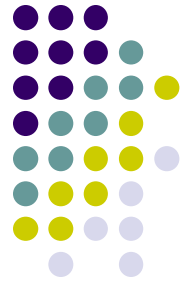
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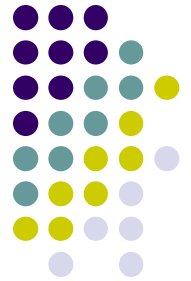
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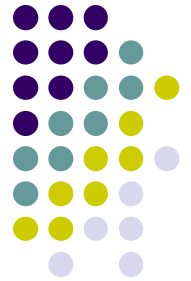
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At what amount of diurnal variation can one be fairly confident the pt has glaucoma?

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More

At what amount of diurnal variation can one be fairly confident the pt has glaucoma?
The BCSC *Glaucoma* book mentions **10 mmHg** in this regard

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What are some of the causes of intermittent IOP elevation in a pt with open angles?

--**Diurnal IOP variation in high-tension OAG**

As a clinician, what can one do to minimize the chance of missing the high readings in a pt with wide diurnal variation?



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--**Diurnal IOP variation in high-tension OAG**

As a clinician, what can one do to minimize the chance of missing the high readings in a pt with wide diurnal variation?
Determine a **pressure curve** for all 'NTG' pts, ie, check their IOP at multiple time points throughout the day





Q

Normal-Tension Glaucoma (NTG)

You have a patient with GON and IOP in the normal range. What is the noneponymous name for Posner-Schlossman?

DDx

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--Essential IOP variation in high-tension OAG

--Posner-Schlossman syndrome

A

Normal-Tension Glaucoma (NTG)

You have a patient with GON, IOP 15, but you missed it.
What is the noneponymous name for Posner-Schlossman?
Glaucomatocyclitic crisis

DDx

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--The IOP is high,
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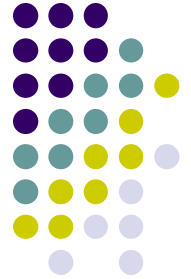
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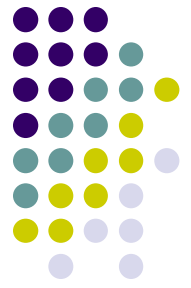
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--Essential IOP variation in high-tension OAG

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Q

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You have a patient with GON and IOP in the normal range. What is the noneponymous name for Posner-Schlossman? Glaucomatocyclitic crisis

Who is the typical pt?

DDx

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--**Posner-Schlossman syndrome**

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Normal-Tension Glaucoma (NTG)

You have a patient with GON and IOP in the normal range. What is the noneponymous name for Posner-Schlossman?
Glaucomatocyclitic crisis

Who is the typical pt?
An adult age 20-50

DDx

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Glaucomatocyclitic crisis

Who is the typical pt?
An adult age 20-50

Does the inflammatory component tend to be mild, or severe?

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--**Posner-Schlossman syndrome**



A

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You have a patient with GON and IOP that is normal. What is the noneponymous name for Posner-Schlossman? Glaucomatocyclitic crisis

Who is the typical pt?
An adult age 20-50

Does the inflammatory component tend to be mild, or severe?
Mild

DDx

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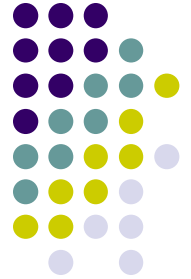
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Glaucomatocyclitic crisis

Who is the typical pt?
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Does the **inflammatory component** tend to be mild, or severe?
Mild

Does the eye tend to be **red and angry**?

--Normal IOP variation in high-tension OAG
--Posner-Schlossman syndrome

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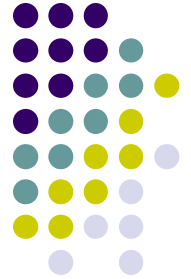
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anymore

--It ain't GON



A

Normal-Tension Glaucoma (NTG)

You have a patient with GON and IOP < 21 mmHg. What is the noneponymous name for Posner-Schlossman?
Glaucomatocyclitic crisis

Who is the typical pt?
An adult age 20-50

Does the **inflammatory component** tend to be mild, or severe?
Mild

Does the eye tend to be **red and angry**?
No, it is usually **white and quiet**

--Essential IOP variation in high-tension OAG
--Posner-Schlossman syndrome

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Q

Normal-Tension Glaucoma (NTG)

You have a patient with GON and IOP that is normal. What is the noneponymous name for Posner-Schlossman? Glaucomatocyclitic crisis

Who is the typical pt?
An adult age 20-50

Does the inflammatory component tend to be mild, or severe?
Mild

Does the IOP elevation tend to be mild, or severe?

--Essential IOP variation in high-tension OAG

--**Posner-Schlossman syndrome**

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You have a patient with GON, IOP 15, but you missed it
optic nerve
n

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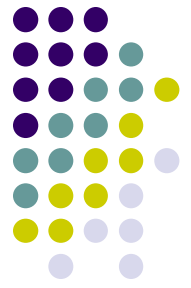
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Severe

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Mild

Does the IOP tend to be mild, or severe?
Severe How severe?

--Essential IOP variation in high-tension OAG

--Posner-Schlossman syndrome

DDx

--Duh, it's NTG

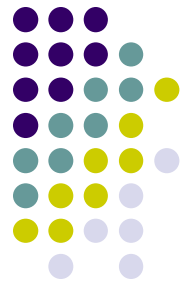
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intermittently high,
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missing it

--The IOP **used to be**
high, but it's not
anymore

--It ain't GON



A

Normal-Tension Glaucoma (NTG)

You have a patient with GON and IOP in the normal range. What is the noneponymous name for Posner-Schlossman? Glaucomatocyclitic crisis

Who is the typical pt?
An adult age 20-50

Does the inflammatory component tend to be mild, or severe?
Mild

Does the IOP tend to be mild, or severe?

Severe How severe?
IOP in the 40-60 range is typical

--Normal IOP variation in high-tension OAG

--Posner-Schlossman syndrome

DDx

--Duh, it's NTG

--The IOP is high, but you missed it

--The IOP is high, but it's being suppressed

--The IOP is **intermittently** high, and you keep missing it

--The IOP **used to be** high, but it's not anymore

--It ain't GON



Q

Normal-Tension Glaucoma (NTG)

You have a patient with GON, IOP 15-20, and optic nerve damage. What is the noneponymous name for Posner-Schlossman? Glaucomatocyclitic crisis

Who is the typical pt?
An adult age 20-50

Does the inflammatory component tend to be mild, or severe?
Mild

Does the IOP elevation tend to be mild, or severe?
Severe

How long do the crises last?

--Essential IOP variation in high-tension OAG

--**Posner-Schlossman syndrome**

DDx

--Duh, it's NTG

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but you missed it

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--The IOP **used to be**
high, but it's not
anymore

--It ain't GON

A

Normal-Tension Glaucoma (NTG)

You have a patient with GON, IOP 15-18, but you missed it. What is the noneponymous name for Posner-Schlossman? Glaucomatocyclitic crisis

DDx

--Duh, it's NTG

--The IOP is high, but you missed it

--The IOP is high, but it's being suppressed

--The IOP is **intermittently** high, and you keep missing it

--The IOP **used to be** high, but it's not anymore

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Who is the typical pt?
An adult age 20-50

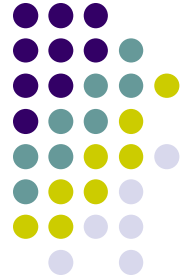
Does the inflammatory component tend to be mild, or severe?
Mild

Does the IOP elevation tend to be mild, or severe?
Severe

How long do the crises last?
Hours to days

--Essential IOP variation in high-tension OAG

--**Posner-Schlossman syndrome**





Q

Normal-Tension Glaucoma (NTG)

You have a patient with GON, IOP 15/15, but you missed it. What is the noneponymous name for Posner-Schlossman? Glaucomatocyclitic crisis

DDx

--Duh, it's NTG

--The IOP is high, but you missed it

--The IOP is high, but it's being suppressed

--The IOP is **intermittently** high, and you keep missing it

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Who is the typical pt?
An adult age 20-50

Does the inflammatory component tend to be mild, or severe?
Mild

Does the IOP elevation tend to be mild, or severe?
Severe

How long do the crises last?
Hours to days

Do they recur?

--Essential IOP variation in high-tension OAG

--**Posner-Schlossman syndrome**

A

Normal-Tension Glaucoma (NTG)

You have a patient with GON, IOP 15/15, but you missed it. What is the noneponymous name for Posner-Schlossman? Glaucomatocyclitic crisis

DDx

--Duh, it's NTG

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An adult age 20-50

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Mild

Does the IOP elevation tend to be mild, or severe?
Severe

How long do the crises last?
Hours to days

Do they recur?
Yes

--Essential IOP variation in high-tension OAG
--Posner-Schlossman syndrome





Q

Normal-Tension Glaucoma (NTG)

You have a patient with GON and IOP. What is the noneponymous name for Posner-Schlossman?
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Who is the typical pt?
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Does the inflammatory component tend to be mild, or severe?
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How long do the crises last?
Hours to days

Do they recur?
Yes

--Essential IOP variation in high-tension OAG

--**Posner-Schlossman syndrome**

What are the presenting complaints in Posner-Schlossman?

--
--
--

DDx

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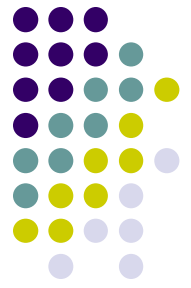
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A

Normal-Tension Glaucoma (NTG)

You have a patient with GON and IOP that is normal. What is the noneponymous name for Posner-Schlossman?
Glaucomatocyclitic crisis

DDx

--Duh, it's NTG

--The IOP is high, but you missed it

--The IOP is high, but it's being suppressed

--The IOP is **intermittently** high, and you keep missing it

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Who is the typical pt?
An adult age 20-50

Does the inflammatory component tend to be mild, or severe?
Mild

Does the IOP elevation tend to be mild, or severe?
Severe

How long do the crises last?
Hours to days

Do they recur?
Yes

--Unilateral IOP variation in high-tension OAG

--Posner-Schlossman syndrome

What are the presenting complaints in Posner-Schlossman?

- Unilateral discomfort
- Blurred vision
- Haloes around lights



Normal-Tension Glaucoma (NTG)

You have a patient with GON and IOP that is normal (or low) but you missed it
optic nerve damage
n

What is the noneponymous name for Posner-Schlossman?
Glaucomatocyclitic crisis

Who is the typical pt?
An adult age 20-50

Does the inflammatory component tend to be mild, or severe?
Mild

Does the IOP elevation tend to be mild, or severe?
Severe

How long do the crises last?
Hours to days

Do they recur?
Yes

--Unilateral IOP variation in high-tension OAG

--**Posner-Schlossman syndrome**

What are the presenting complaints?

--**Unilateral discomfort**

--Blurred vision

--Haloes around lights

Take note—Posner-Schlossman is a unilateral dz!

DDx

--Duh, it's NTG

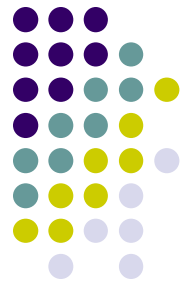
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How long do the crises last?
Hours to days

Do they recur?
Yes

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--**Posner-Schlossman syndrome**

What are the presenting complaints in Posner-Schlossman?

--Unilateral discomfort

--**Blurred vision**

--**Halo around lights**

What is the cause of the blurred vision/haloes?

DDx

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How long do the crises last?
Hours to days

Do they recur?
Yes

--Unilateral IOP variation in high-tension OAG

--**Posner-Schlossman syndrome**

What are the presenting complaints in Posner-Schlossman?

--Unilateral discomfort

--**Blurred vision**

--**Halo around lights**

What is the cause of the blurred vision/haloes?
Corneal edema secondary to the high IOP

DDx

--Duh, it's NTG

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Q

Normal-Tension Glaucoma (NTG)

You have a pt with ONH and VF changes c/w glaucomatous optic neuropathy (GON), but at every exam, her IOP is never high. **Other than NTG, what is in the DDX?**

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What clinical scenarios might explain why an eye once had elevated IOP, but no longer does?



Q/A

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Histories of the following:

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--
--

Also...



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Histories of the following:

- Systemic steroid use with steroid-response glaucoma
- Trauma with angle damage and/or severe inflammation
- Uveitis

Also... So-called 'burned out pigment-dispersion glaucoma'



Q

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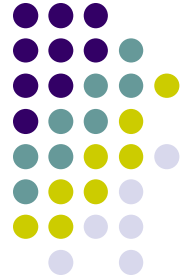
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Also... So-called 'burned out' **pigment-dispersion glaucoma**



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What is pigment-dispersion glaucoma (PDG)?

A form of secondary OAG in which pigment liberated from the posterior aspect of the iris leads to elevated IOP

What clinical scenarios might explain why an eye once had elevated IOP, but no longer does?

Histories of the following:

- Systemic steroid use with steroid-response glaucoma
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Q

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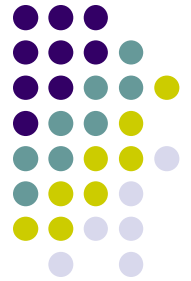
What is the mechanism by which pigment is liberated from the posterior iris?

What clinical scenarios might explain why an eye once had elevated IOP, but no longer does?

Histories of the following:

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- Trauma with angle damage and/or severe inflammation
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A

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What is pigment-dispersion glaucoma (PDG)?

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What is the mechanism by which pigment is liberated from the posterior iris?

Rubbing of the lens zonules against the iris

What clinical scenarios might explain why an eye once had elevated IOP, but no longer does?

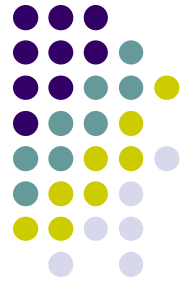
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Q

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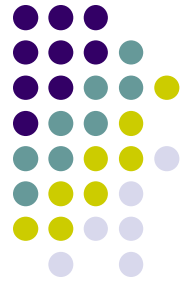
*What are the classic clinical signs of PDG located on...
...the iris?*

What clinical scenarios might explain why an eye once had elevated IOP, but no longer does?

Histories of the following:

- Systemic steroid use with steroid-response glaucoma
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A

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What is pigment-dispersion glaucoma (PDG)?

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*What are the classic clinical signs of PDG located on...
...the iris?* Transillumination defects

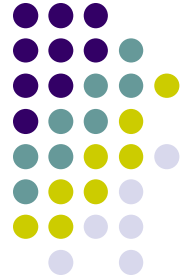
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Also... So-called 'burned out' **pigment-dispersion glaucoma**





Q

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How are the transillumination defects typically oriented?

*What are the classic clinical signs of IOP located on...
...the iris? **Transillumination defects***

What clinical scenarios might explain why an eye once had elevated IOP, but no longer does?

Histories of the following:

- Systemic steroid use with steroid-response glaucoma
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How are the transillumination defects typically oriented?
Radially

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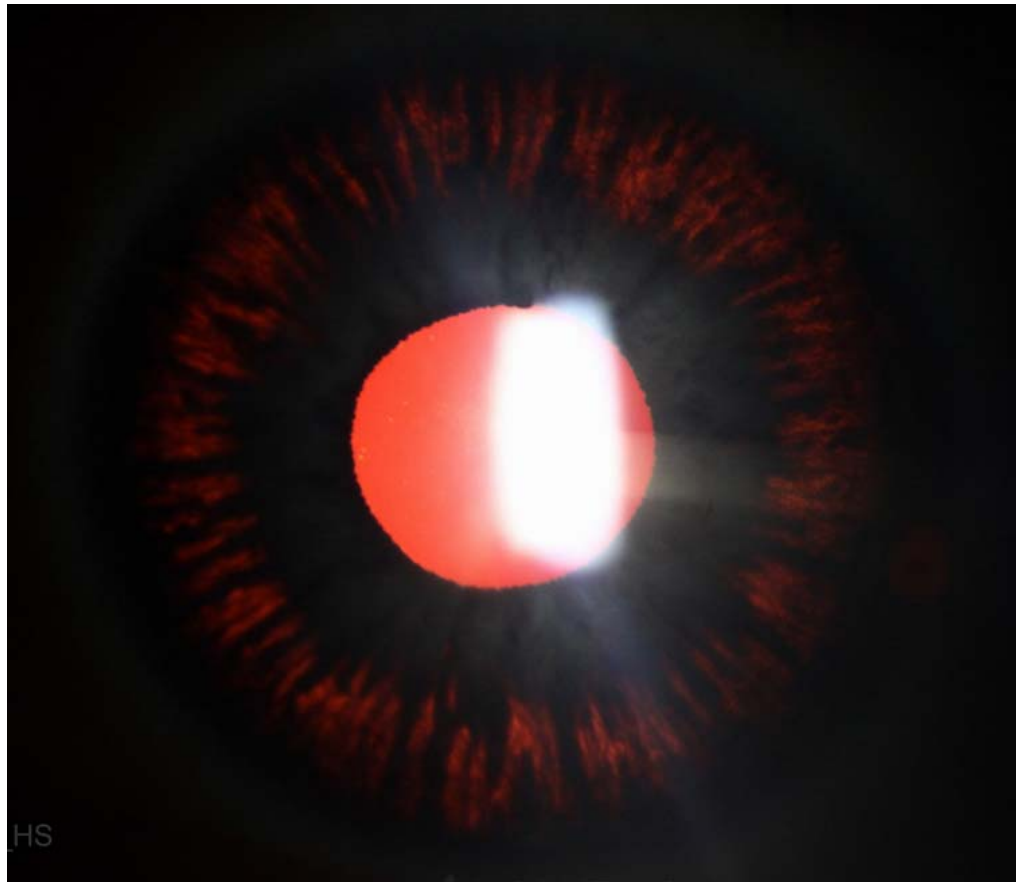
Histories of the following:

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Normal-Tension Glaucoma (NTG)



Pigment dispersion syndrome: Radial TID



Q

Normal-Tension Glaucoma (NTG)

You have a pt with ONH and VF changes c/w glaucomatous optic neuropathy (GON), but at every exam, her IOP is never high. **Other than NTG, what is in the DDX?**

DDx

--Duh, it's NTG

--The IOP is high, but you missed it

How are the transillumination defects typically oriented?
Radially

--The IOP is high, but it's being suppressed

If they were limited to the pupillary margin, what dz process would be suggested?

--The IOP is **intermittently** high, and you keep missing it

*What are the classic clinical signs of IOP located on...
...the iris? **Transillumination defects***

--The IOP **used to be** high, but it's not anymore

What clinical scenarios might explain why an eye once had elevated IOP, but no longer does?

Histories of the following:

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Also...So-called 'burned out' **pigment-dispersion glaucoma**

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A

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DDx

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How are the transillumination defects typically oriented?
Radially

--The IOP is high, but it's being suppressed

If they were limited to the pupillary margin, what dz process would be suggested?
Pseudoexfoliation syndrome (PXS)

--The IOP is **intermittently** high, and you keep missing it

*What are the classic clinical signs of PXS located on...
...the iris? **Transillumination defects***

--The IOP **used to be** high, but it's not anymore

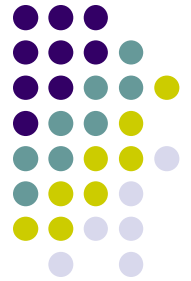
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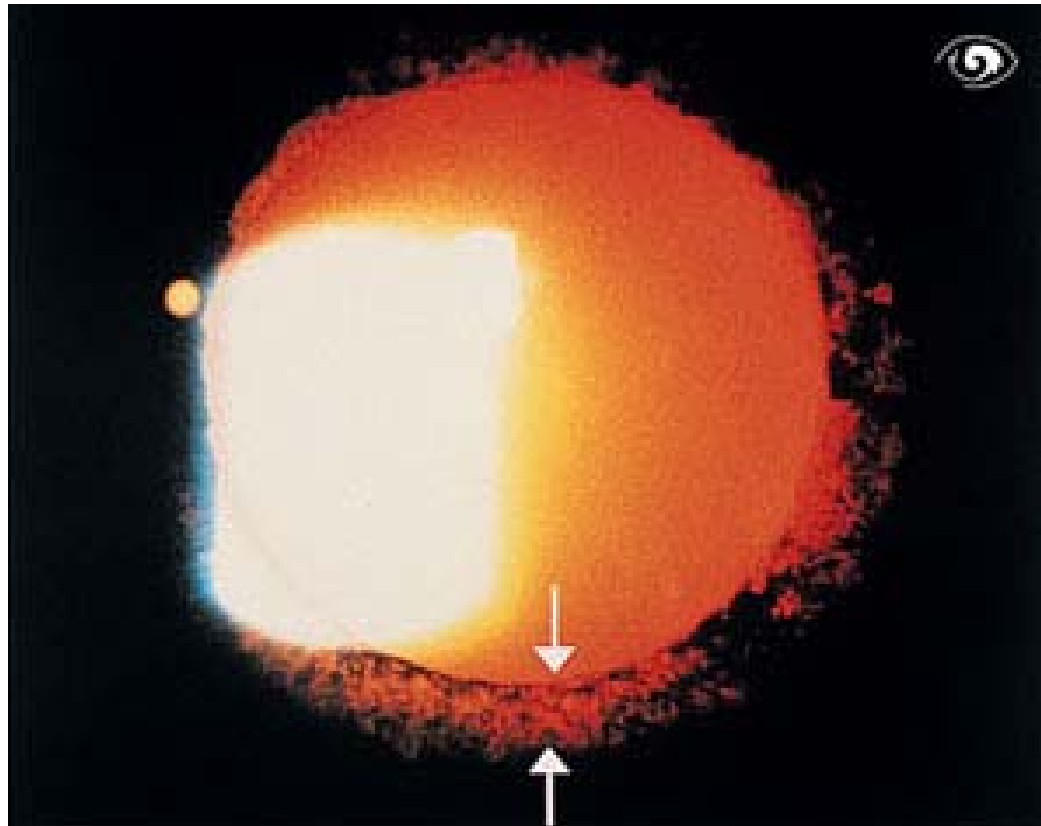
- Systemic steroid use with steroid-response glaucoma
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Also...So-called 'burned out' **pigment-dispersion glaucoma**

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Normal-Tension Glaucoma (NTG)



Pseudoexfoliation syndrome: Marginal TID

Q

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What is pigment-dispersion glaucoma (PDG)?

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What are the classic clinical signs of PDG located on...

...the iris? Transillumination defects

...the cornea?

What clinical scenarios might explain why an eye once had elevated IOP, but no longer does?

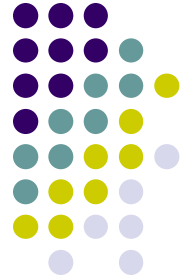
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What is a Krukenberg spindle?

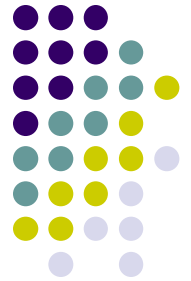
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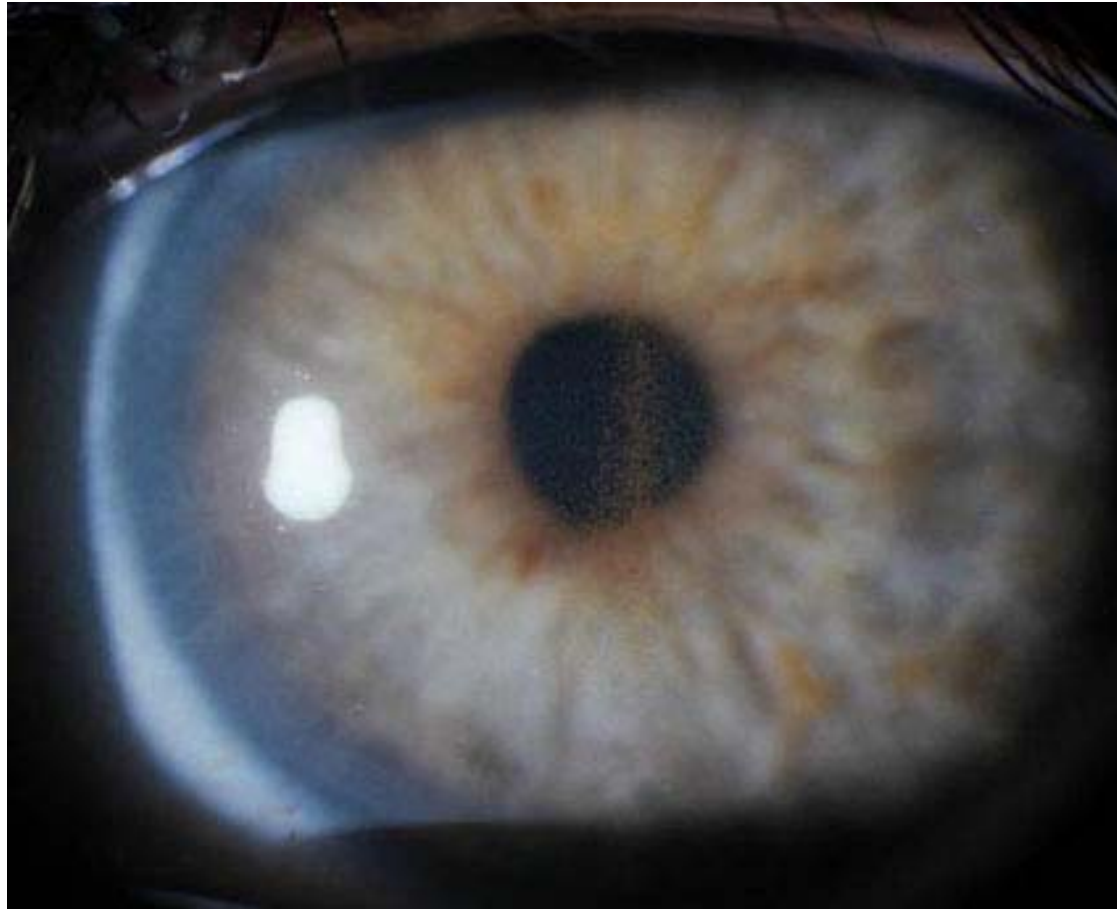
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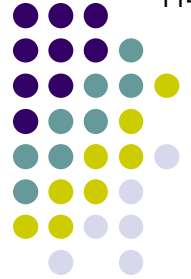
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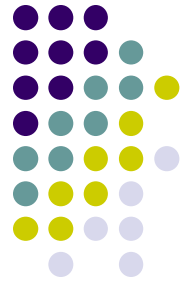
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A scalloped line of pigment located anterior (ie, 'above' on gonioscopy) to Schwalbe's line in the angle

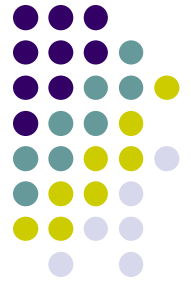
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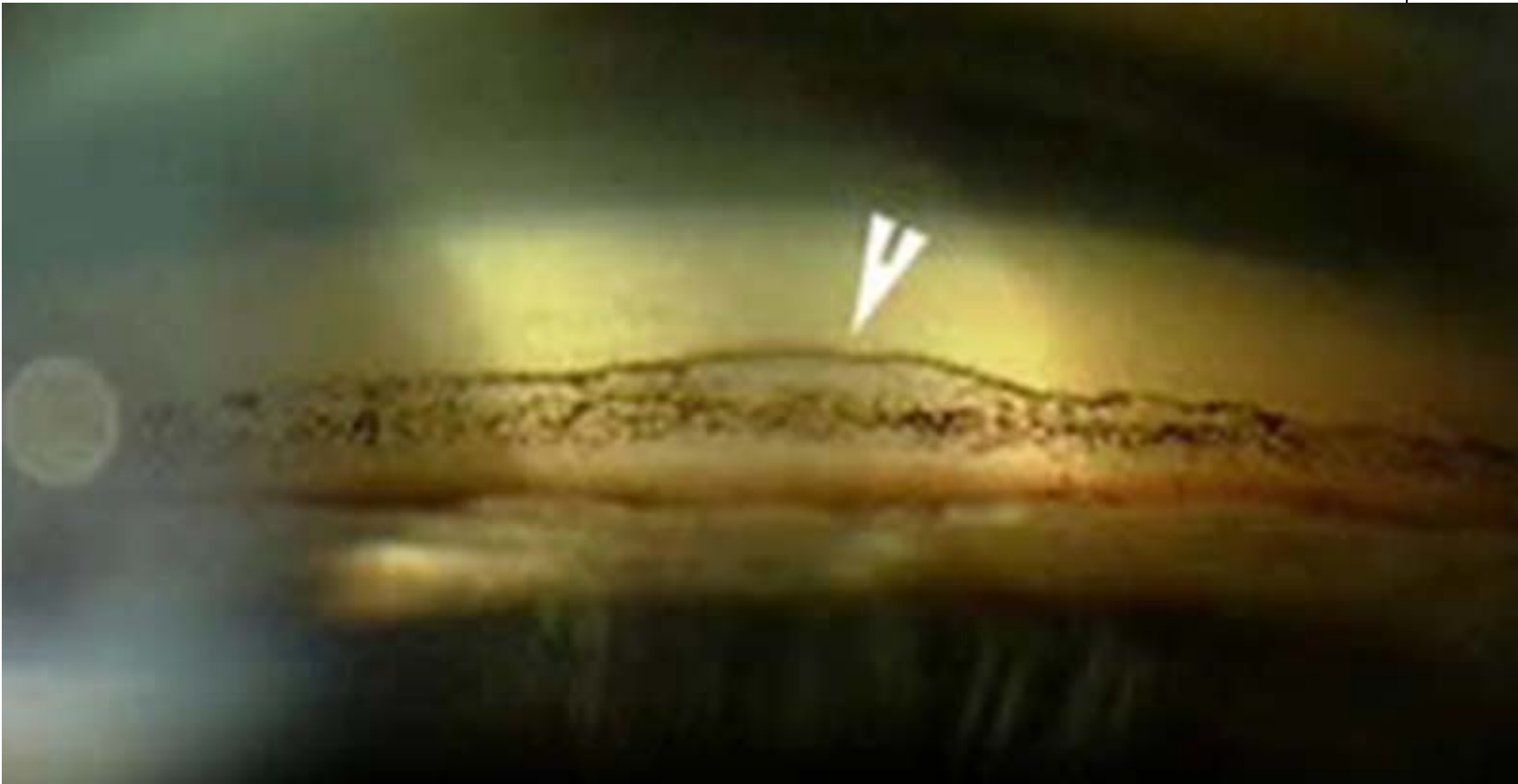
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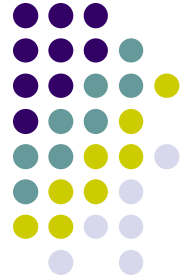
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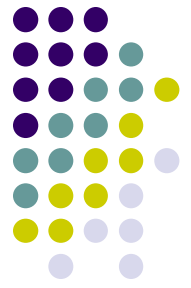
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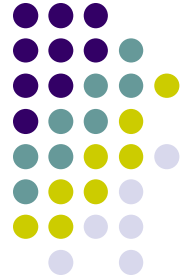
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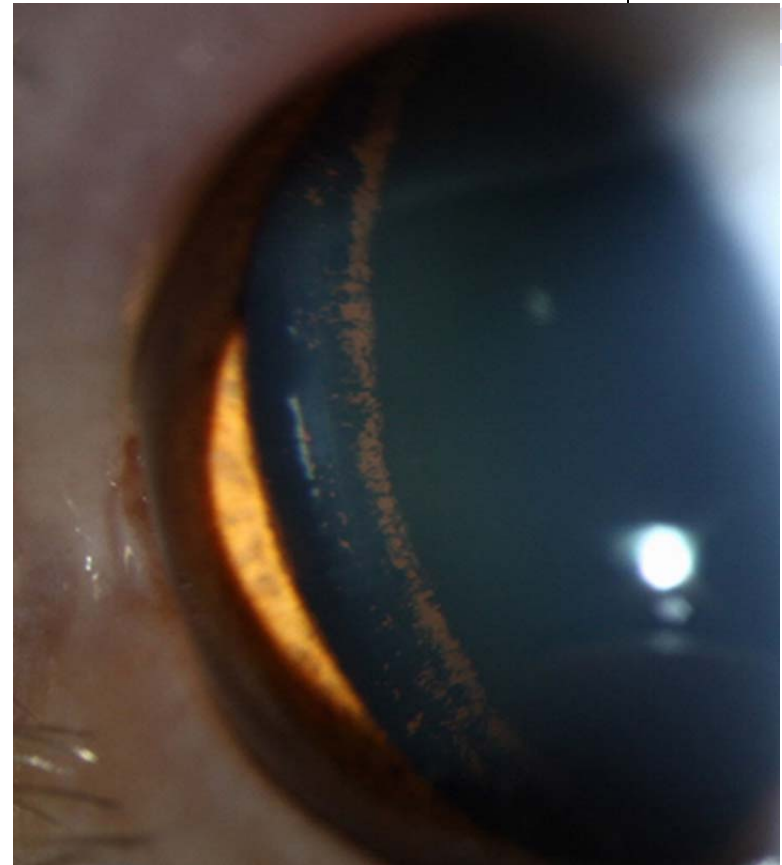
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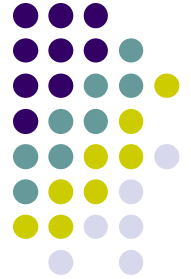


Retroillumination



Direct illumination

Scheie stripe



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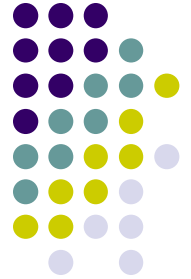
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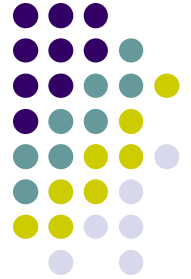
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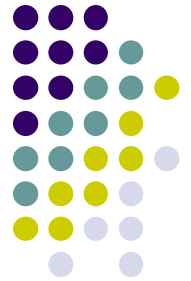
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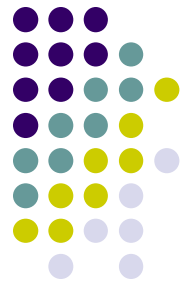
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--Optic nerve colobomas

--Optic nerve hypoplasia

--Superior segmental hypoplasia



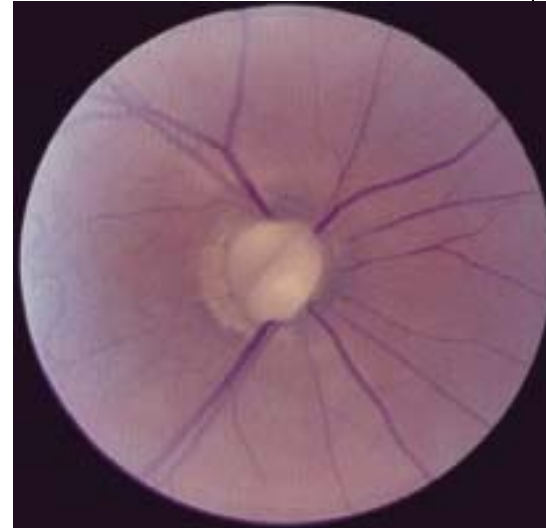
ON?



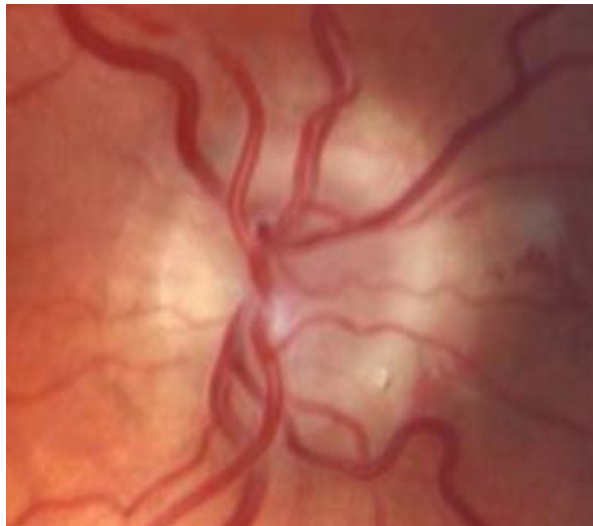
Normal-Tension Glaucoma (NTG)



Optic nerve pit



Optic nerve coloboma



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Q

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What 'ain't GON' conditions might present with ONH and VF changes?

--**Certain congenital disc anomalies**

--Hx of AION

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*What are the **4 D's** of optic nerve hypoplasia?*

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--D

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Hints forthcoming...

Four congenital disc anomalies can mimic NTG. What are they?

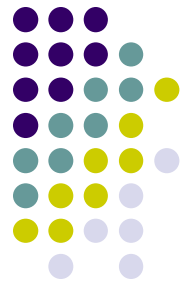
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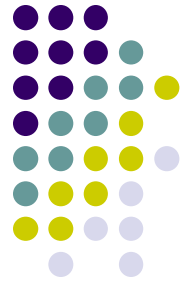
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--**D**rugs (especially anti-sz meds, esp.)

5th 'D'

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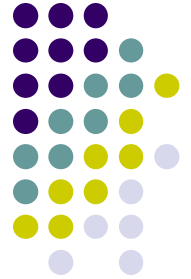
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What specific pattern of ON hypoplasia is associated with maternal DM?

- Drink (ie, heavy EtOH consumption)
- Diabetes**
- Drugs (especially anti-sz meds, esp. Dilantin)
- De Morsier syndrome

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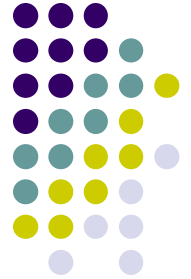
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What does AION stand for in this context?

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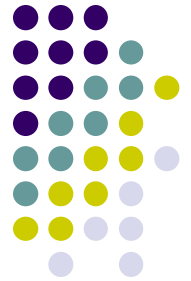
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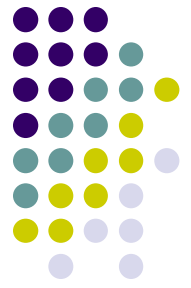
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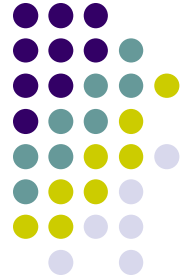
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Arteritic (AAION) and nonarteritic (NAION)

What is suggestive of GON?



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What disease is being referred to by the modifier 'arteritic'?

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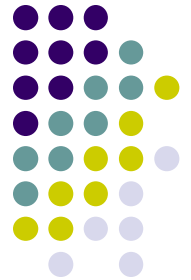
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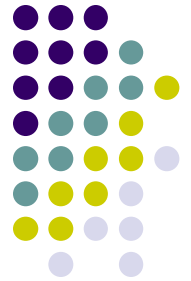
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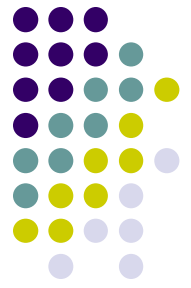
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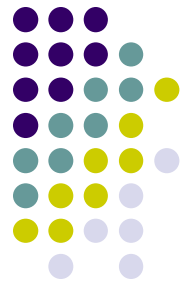
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What sorts of events should one ask about?

- Cardiac arrest
- Cardiac surgery involving a bypass machine
- Significant blood loss during surgery or after trauma
- A history of shock with profound hypotension
- A history of severe anemia

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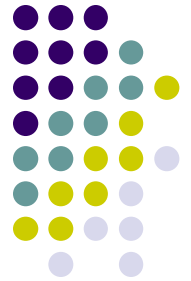
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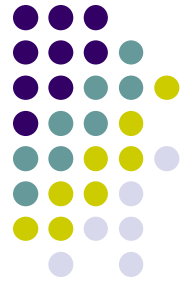
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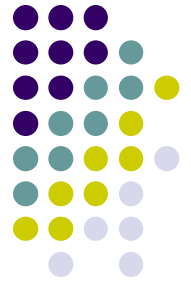
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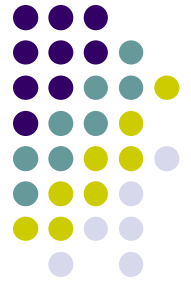
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Normal-Tension Glaucoma (NTG)

Objective: Determine whether IOP is involved in the pathogenesis of NTG

What was the name of the clinical trial that had this as its objective?

**A****Normal-Tension Glaucoma (NTG)****Collaborative Normal-Tension Glaucoma Study**

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Normal-Tension Glaucoma (NTG)

- **Collaborative Normal-Tension Glaucoma Study**
 - Objective: Determine whether IOP is involved in the pathogenesis of NTG

What was the name of the clinical trial that had this as its objective?
Depending on who you ask, there are 6-8 glaucoma clinical trials a resident might be expected to know by name, **and the CNTGS is one of them.** (As for the others, we'll meet one shortly, and the rest of mine can be found in the *Glaucoma Clinical Trials* slide-set.)

No question—proceed when ready



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Q

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 - Tx: 3 modalities as needed to lower IOP %



A

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 - Tx: **Meds/ALT/surgery** as needed to lower IOP **30%**



Q

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What one topical hypotensive was used?



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Pilo



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 - Findings:
 - Lowering IOP 30% → reduced rate of ONH/VF loss, **but...**



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 - 65% of untreated eyes had two words



A

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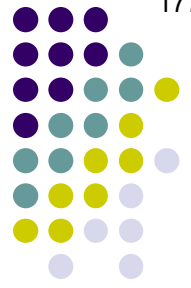
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If you remember nothing else about the *CNTGS*,
remember this!

If asked—on the OKAP, the WQE, the Boards, or in clinic—what your initial treatment goal is for a NTG pt, the answer is a **30% reduction in IOP from baseline.**

lower IOP 30%

- Lowering IOP 30% → reduced rate of ONH/VF loss, *but...*
 - 65% of untreated eyes had *no progression*
 - 12% of treated eyes *progressed anyway*



Q

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The CNTGS employed pilo—très passé. Regarding other meds, is there a reason to use a particular med (or to avoid one)?

- Protocol: 1 eye

- Tx: **Meds**

- Findings:

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 - 65% of untreated eyes **progressed**
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Q/A

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*Yes and yes. The *Glaucoma* book is at pains to point out that the *Early Manifest Glaucoma Trial* (EMGT—another know-by-name glaucoma clinical trial) found that in NTG pts, tx with a β blocker + ALT combo failed to produce a significant reduction in IOP. So, maybe avoid β blockers.*



Q/A

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A

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So, maybe avoid β blockers. As for preferred meds, the book mentions that there is *some* evidence of a 'neuroprotective effect' imparted by the highly selective α agonists, in particular brimonidine. So you might give that a shot.

Normal-Tension Glaucoma (NTG)

Speaking of the

- **Early Manifest Glaucoma Trial...**





Q

Normal-Tension Glaucoma (NTG)

- **Early Manifest Glaucoma Trial**
 - Objective:



A

Normal-Tension Glaucoma (NTG)

- **Early Manifest Glaucoma Trial**
 - Objective: Compare immediate treatment vs observation in newly-diagnosed POAG/NTG



Q

Normal-Tension Glaucoma (NTG)

- **Early Manifest Glaucoma Trial**

- Objective: Compare immediate treatment vs observation in newly-diagnosed POAG/NTG
- Protocol: 1 eye assigned to I just told you the answer, the other to no treatment



A

Normal-Tension Glaucoma (NTG)

- **Early Manifest Glaucoma Trial**
 - Objective: Compare immediate treatment vs observation in newly-diagnosed POAG/NTG
 - Protocol: 1 eye assigned to **ALT + betaxolol**, the other to no treatment



Q

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● Early Manifest Glaucoma Trial

- Objective: Compare immediate treatment vs observation in newly-diagnosed POAG/NTG
- Protocol: 1 eye assigned to **ALT + betaxolol**, the other to no treatment
- Findings:
 - Significantly more progression in untreated eyes % than in treated eyes %



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- Objective: Compare immediate treatment vs observation in newly-diagnosed POAG/NTG
- Protocol: 1 eye assigned to **ALT + betaxolol**, the other to no treatment
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 - Significantly more progression in untreated eyes (**62%**) than in treated eyes (**45%**)



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 - Progression occurred later in treated eyes
 - ALT + betaxolol had little IOP-lowering effect on eyes for which the baseline IOP was **#** or less



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 - Every 1 mmHg decrease in IOP translated into a roughly **10%** risk reduction regarding progression
 - Progression occurred later in treated eyes
 - ALT + betaxolol had little IOP-lowering effect on eyes for which the baseline IOP was **15** or less