APPROACH TO OPTIC NERVE PALLOR

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BASICS

Pallor vs atrophy
STEPS TO APPROACH PALLOR

After getting a thorough history

1. Pallor or not?
2. Unilateral vs bilateral
3. Exam: VA, RAPD, IOP, CF, EOM
4. Find cause of atrophy
5. Appropriate workup for condition
PSEUDO-PALLOR

Classic presentations and red flags

• Anomalous optic nerves
• Coloboma
• Pits
• Tilted Disc
• Large physiologic cup
• Congenitally blond (light) fundus
• Glaucoma
• Pseudophakia
• Myelinated nerve fiber layer
PSEUDO-PALLOR
PSEUDO-PALLOR

MIMICS OF PALLOR

Scleral show
Small optic nerve

Optic nerve pit

Myelinated nerve fiber layer
DDX

Inflammatory- demyelination (MS), sarcoid, lupus, Bechet’s

Vascular – NAION, AION, CRAO, vasculopathic (HTN, DM, HLD)

Compressive- neoplasm, TED, chiasmal, drusen, glaucoma (elevated IOP compression)

Drugs/Nutritional- methanol, amiodarone, ethambutol, vitamin deficiencies (B9, B12)

Genetic- Leber hereditary optic neuropathy (LHON), autosomal dominant optic atrophy (OPA1)³
DDX

**Congenital** – pre-natal or birth trauma/hypoxia, congenital optic nerve hypoplasia

**Infectious** – syphilis, lyme

**Trauma** – optic neuropathy

**Iatrogenic** – radiation optic neuropathy

**Endocrine** – DM

MOST COMMON

Proper history helps guide a targeted workup

Unilateral, adult, no change over time? NAION
- vasculopathic, swollen disc before, small cup to disc ratio

Unilateral, young person? Optic neuritis

Unilateral, 50+, headache, temporal artery tenderness? Arteritic AION

not ischemic optic neuropathy or optic neuritis? then further assess unilateral or bilateral etiologies
BILATERAL ATROPHY

Bilateral
• Drusen (also unilateral), glaucoma, prior optic disc swelling with 2nd atrophy, sequential NAION

Bilateral with central scotoma
• Systemic: nutritional (B12, folate), LHON, toxic
  • Can be more insidious
UNILATERAL ATROPHY

Unilateral, Continued

- MRI head & orbit Gad w/ fat suppression

- 20% can have neoplasm

- Inflam/infectious: syphilis, TB (Quant, CXR), lyme (things that lurk inside and show no symptoms)

- If all that negative, follow as it is likely a progression of common (recurrent NAION, optic neuritis) or B/L (toxic/nutritional) or U/L (compressive mass that will show later)

- If it continues to progress than you should continue to test
  - NMO, MOG, paraneoplastic, etc.
# USING THE OPTIC NERVE APPEARANCE TO GUIDE DIFFERENTIAL DIAGNOSIS

## OPTIC DISC APPEARANCES

Of note, there are classic findings and there are overlaps that occur

<table>
<thead>
<tr>
<th>Appearance</th>
<th>Diagnosis</th>
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<tbody>
<tr>
<td>Altitudinal pallor</td>
<td>NAION</td>
</tr>
<tr>
<td>Bow-tie pallor</td>
<td>Chiasmal or optic tract pathology</td>
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<tr>
<td>Cupping greater than</td>
<td>Glaucoma</td>
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<tr>
<td>pallor</td>
<td></td>
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<tr>
<td>Gliosis</td>
<td>Prior edema, either papilledema or AION</td>
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<tr>
<td>Pale and elevated</td>
<td>Drusen, chronic papilledema, chronic inflammation, mass lesion, GCA</td>
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<tr>
<td>Temporal pallor</td>
<td>Optic neuritis</td>
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OPTIC NERVE APPEARANCE FOR DDX
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DRUSEN
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REFERENCES

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