Now You See Me…
Your Eye and Stroke

Julius Gene Latorre, MD, MPH
Professor of Neurology and Neurosurgery
Director, Upstate Comprehensive Stroke Center

Nov 17, 2021
Disclosure

- none
Educational Objectives:

1. Discuss mechanism of vision acuity loss (blindness) due to stroke

2. Review evaluation and treatment options for acute vision acuity loss due to stroke
Vision and Stroke Facts

- 1/3 of stroke survivors experience vision loss
- Vision loss after stroke do not fully recover
- Transient vision loss can be a harbinger of (preventable) stroke
Types of Vision loss after Stroke

- Bilateral eye affected
Types of Vision loss after Stroke

- One eye affected - suspect Central Retinal Artery Occlusion

- Pale Optic Disk
- Cherry red spot
DDx for Acute Binocular Vision Loss

- Stroke
- Stroke
- Stroke
- LVO (large vessel occlusion)
DDx for
Acute Monocular Vision Loss

Eye problem – Need Ophthalmologist
- Vitrous hemorrhage
- Retinal detachment
- Demyelinating lesion: MS
- Glaucoma (painful)

Nerve/Brain problem – Need Neurologist
- Demyelination/Multiple Sclerosis/NMO
- Optic neuropathy
- Amaurosis Fugax (symptomatic carotid disease)
- CRAO, BRAO
CRAO

- **Non-arteritic**
  - Thrombus/Embolus
  - Carotid Artery Stenosis

- **Clues to diagnosis**
  - Amaurosis fugax (transient monocular vision loss)
  - Carotid bruit

- **Arteritic**
  - Giant Cell Arteritis

- **Clues to diagnosis**
  - Headache prominent, jaw pain, weight loss
  - Tender temple/scalp
Giant cell arteritis
(aka, Temporal arteritis, Horton disease)

Granulomatous Disease

✓ Affects aorta and its large branches (esp. external carotid arteries).
  ▪ Vessels of head/scalp

✓ Raised & tender temporal artery
✓ Vision loss
✓ Neck/jaw pain
✓ Tongue necrosis
✓ + signs of systemic inflammation (fatigue, fever, weight loss)
✓ Most common in > 55 y.o., Women, Nordic ancestry
  ▪ * Assoc. w/ polymyalgia rheumatica
✓ Complications: Aortic aneurysm, stroke, blindness.
CRAO

- Central Retinal Artery Occlusion
- Ocular/Medical emergency
- Sudden, severe, painless
- 1-2/100,000 male >60
- After 90 min, permanent vision loss occurs
AHA SCIENTIFIC STATEMENT

Management of Central Retinal Artery Occlusion

A Scientific Statement From the American Heart Association

The American Academy of Neurology affirms the value of this statement as an educational tool for neurologists.

The American Association of Neurological Surgeons/Congress of Neurological Surgeons Cerebrovascular Section affirms the educational benefit of this document.


Brian Mac Grory, MB BCh BAO, MRCP, Chair; Matthew Schrag, MD, PhD, Vice-Chair; Valérie Bioussé, MD; Karen L. Furie, MD, MPH, FAHA; Marie Gerhard-Herman, MD; Patrick J. Lavin, MB BCh BAO, MRCPI; Lucia Sobrin, MD, MPH; Stavropoula I. Tjoumakaris, MD; Cornelia M. Weyand, MD, PhD; Shadi Yaghi, MD, FAHA; on behalf of the American Heart Association Stroke Council; Council on Arteriosclerosis, Thrombosis and Vascular Biology; Council on Hypertension; and Council on Peripheral Vascular Disease.
1. Acute, monocular visual loss

− Triage to ED for STAT ophthalmological examination (or fundus photography via Tele-Ophthalmology) and exclusion of GCA

− CRAO – STEP 2

2. CRAO is most likely diagnosis

− Parallel workflow to determine candidacy for thrombolysis and exclude GCA
  - Institutional thrombolysis protocol
    1. CT Brain
    2. Establish time last known well
    3. Screen for contraindications
  - Assessment for GCA
    1. Obtain further clinical history
    2. Temporal artery palpation
    3. ESR/CRP if high clinical suspicion
  - Measurement of visual function
    1.Verify baseline visual acuity
    2. Visual acuity with correction
    3. Confrontation visual fields

− Arteritic CRAO/GCA
  1. High-dose intravenous methylprednisolone
  2. Temporal artery biopsy

− Non-arteritic CRAO
  - Within 4.5 hours
    - No systemic contraindications
    - Consider IV tPA
  - Patient not a candidate for IV thrombolysis
    - <6 hours from symptom onset
    - IA capable center
    - Consider IA tPA
Central Retinal Artery Occlusion: Visual Outcome

SOHAN SINGH HAYREH, MD, MS, PhD, DSc, FRCS, FRCOphth, AND M. BRIDGET ZIMMERMAN, PhD

244 patients CRAO
VA and VF improved primarily first 7 days

74.2% present CF or worse vision

<table>
<thead>
<tr>
<th>Initial visual acuity</th>
<th>20/40 better</th>
<th>CF/worse</th>
</tr>
</thead>
<tbody>
<tr>
<td>NA-CRAO (66.9%)</td>
<td>None</td>
<td>93.2%</td>
</tr>
<tr>
<td>NA-CRAO w/ cilioretinal sparing (14.3%)</td>
<td>20%</td>
<td>60%</td>
</tr>
<tr>
<td>Transient NA-CRAO (16%)</td>
<td>37.9%</td>
<td>37.9%</td>
</tr>
<tr>
<td>Arteritic CRAO (4.5%)</td>
<td>None</td>
<td>75%</td>
</tr>
</tbody>
</table>

Life after CRAO

- Lifetime reduced ave 10 years vs healthy
- 30% RAO died after average 4.2 years
- Stroke risk 10 times higher vs general population 3.5 years
- Increased stroke risk up to 10 years
- **Stroke Education**
- Risk Factors: DM, HTN, Hyperlipidemia
- Additional ocular sequelae
  - NV, NVI, NVA, NVG

[References]
- Rim et al. Stroke 2016
- Lorentzen SE. Acta Oph 1999
THANK YOU

THIS ISN'T FUNNY
I'm having a stroke