Anterior Segment Ischemia After Strabismus Surgery for IIIrd Nerve Palsy

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Outline

1. Bilateral nuclear 3rd nerve palsy + vertical gaze palsy
2. Strabismus Surgery
3. Anterior Segment Ischemia
Case History

- 41 yo F, hx of dizziness x 5 yrs, head CT
- January 10, 2008 CT: basilar artery aneurysm, 15 mm diameter
- Neurology, Interventional Radiology
  - Informed Consent
    - “uncertain benefits” + “endovascular risks described
    - SAH risk, death
Cerebral Angiogram

Pre-Embolization

- Basilar Artery Aneurysm

Post-Embolization

- Basilar Artery Coil
- Posterior Cerebral Artery
- Superior Cerebellar Artery
- Anterior Inferior Cerebellar Artery
- Posterior Inferior Cerebellar Artery
- Vertebral Artery
- Vertebral Artery Cross Filling
- CN III
- CN VI
Case History

- Post-op SAME day
  - Hx - drowsiness, oculomotor paresis, bilateral ptosis, paresis of Rt arm
    - Suspect basilar artery thrombosis ~ repeat cerebral angio
  - Angiogram - occlusion of midbrain perforating arteries
Case - Neuro Follow-Up

- July 2008
  - EOM “gradually improved, especially left eye”
  - Better function of eyelids ou

- September 2008
  - “Left pupil + EOM normal”
  - Right eye EOM “still problematic”
April 28, 2010 - Ophthalmology

- c/o diplopia
- POHx - nil
- VA - 6/7.5 OD, 6/6 OS
- Pupils - OD 3 mm, poor reaction; OS 2 mm, normal
- IOP + anterior segment normal
April 28, 2010

RXT' 70
RHT' 30

Bilateral Nuclear 3rd Nerve Palsy (superior division recovery) + Bilateral Vertical Gaze Palsy

Saccades -4
CN III Pathway

Anterior cerebral artery (ACA)
Anterior communicating artery (ACComm)
Internal carotid artery (ICA)
Middle cerebral artery (MCA)
Posterior communicating artery (PComm)
Circle of Willis
Posterior cerebral artery (PCA)
Superior cerebellar artery (SCA)
Basilar artery
Anterior inferior cerebellar artery (AICA)
Posterior inferior cerebellar artery (PICA)
Vertebral artery
Bilateral Nuclear IIIrd Palsy
Superior Division Recovery
Inferior Division Remains

RXT’ 70
RHT’ 30

Pupils - OD 3 mm, poor reaction
OS 2 mm, normal reaction

Saccades -4

Bilateral Vertical Gaze Palsy
Gaze Palsy

riMLF (vertical mvt)

PPRF (horizontal mvt)
Gaze Palsy

- Artery of Percheron
- Thalamus
- Basilar Artery
Plan for Strabismus Treatment

• RMR resect/RLR recess + RSR recess/RIR resect

• Written consent

1. No binocular vision possible
2. Will definitely see double after
3. Impossible to have full correction of RXT
4. ASI possible - operate on all 4 rectus muscles

Saccades

RXT’ 70
RHT’ 30
Post Op #1 - April 28, 2010

- RSR recess 8mm + RIR resect 5mm (adjustable)

OD Elevation -2

RXT’ 70
RHT’ small
Post-Op #2 - October 20, 2010

- RMR resect 9.5mm + RLR recess 12mm (adjustable)
ASI - Clinical Findings

- Incidence = < 1/13,000
- Signs:
  - mild, self-limited iritis
  - iris ischemia + atrophy
  - striate keratopathy
  - posterior synechiae
  - cataract
  - phthisis bulbi
# Post-Op Course

<table>
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<tr>
<th>Date</th>
<th>VA</th>
<th>IOP</th>
<th>Cornea</th>
<th>AC cells</th>
<th>Right Pupil</th>
<th>PF gtt</th>
<th>Pred po</th>
<th>Tobradex</th>
<th>Mydriacyl</th>
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<tr>
<td>21-Oct-10</td>
<td>20/70-</td>
<td></td>
<td>1+ DM folds</td>
<td>1+ cells</td>
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<td>&lt;8</td>
<td>haze 5 o’clock</td>
<td>occ cells</td>
<td>PS inferiorly</td>
<td>q2h</td>
<td>30 mg</td>
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<td>clear</td>
<td>occ cells, 1+ flare</td>
<td>atrophy inferonasal</td>
<td>tid</td>
<td>3 mg</td>
<td>D/C</td>
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<tr>
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Iris FA
Few days after 2nd strabismus surgery

Early - delayed filling inferonasally

Late
Iris FA

3 months after 2nd strabismus surgery

Punctate staining @ 5 o’clock + stromal opacification

Early - leakage in inferonasal area

Late - leakage
Conclusion

- Embolization treatment can lead to CN palsies
- Difficult case - large XT, hypertropia + paretic muscles
- ASI - no proven treatment
  - Usually good prognosis

Pre-Op  | Post-Op #1  | Post-Op #2  | 5 months post 2nd OR
References


• Johnson MS, Christiansen SP, Rath PP. Anterior ciliary circulation from the horizontal rectus muscles. Strabismus 2009; 17:45-48.


