Return to Neuro-Op

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ABSTRACT: Using short case presentations, the speakers will engage the audience in determining the best immediate management of various acute neuro-ophthalmic disorders. Emphasis will be placed on acute neuro-ophthalmic disorders often seen in optometry practice and specific recommendations will be made to ensure appropriate triage and immediate management of common neuro-ophthalmic emergencies.

Course Learning Objectives:

1. To better understand the varied clinical presentations and etiologies of increased intracranial pressure.
2. To become familiar with the appropriate triage and specific immediate management of increased intracranial pressure.
3. To better understand the varied clinical presentations and etiologies of diplopia.
4. To become familiar with the appropriate triage and specific immediate management of diplopia.

OUTLINE:

a. **<u>INCREASED INTRACRANIAL PRESSURE</u>**
    i. Important Elements of History
        1. Symptoms of Increased Intracranial Pressure
            a. Headache
            b. Nausea
            c. Vomiting
            d. Pulsatile Tinnitus
            e. Transient Visual Obscurations
            f. Diplopia
        2. Focal Neurologic Symptoms and Signs
        3. Onset of Symptoms
            a. Sudden
            b. Chronic
        4. Medications Used
            a. Vitamin A
            b. Tetracycline
        5. History of Recent Trauma
        6. History of Recent Illness /Fever
        7. History of Cancer
        8. Weight / Changes in Weight
    ii. Important Clinical Evaluation
        1. Visual Acuity
        2. Color Vision
        3. Visual Field
        4. Pupil Testing
        5. Ductions / Cover Testing
            a. CN VI Palsy with Papilledema
        6. Optic Disc Assessment
            a. Edema
                i. Paton's Lines
                ii. Obscuration of Vessels
                iii. Is there a Spontaneous Venous Pulsation
    iii. Differential Diagnoses
        1. Brain Mass

2. **Venous Sinus Thrombosis**
3. **Meningitis**
    a. Neck Pain
    b. Fever
4. **Sub-Dural Hemorrhage / Sub-Arachnoid Hemorrhage**
5. **Idiopathic Intracranial Hypertension**
    a. Modified Dandy Criteria

iv. Triage / Immediate Management
1. Timeframe
    a. When is it emergent
    b. When is it urgent
    c. When is it other
2. Testing
    a. Labs
    b. Imaging
        i. MRI brain and orbits without and with contrast
        ii. CT brain and orbits and CTV with contrast
            1. If MRI contraindicated
        iii. MRV with contrast
            1. Venous Sinus Thrombosis
        iv. Lumbar Puncture
            1. Opening Pressure
            2. Analysis of CSF contents
3. Treatment

b. <u>DIPLOPIA</u>

i. Important Elements of History
1. Onset of Symptoms
    a. Sudden
    b. Chronic
2. Type of Diplopia
    a. Monocular
    b. Binocular
        i. Muscle
        ii. Junction
        iii. Nerve
        iv. Brain

c. Horizontal vs vertical
d. Worse at distance or near
e. Associated Pain / Headache

ii. Important Clinical Evaluation
1. Saccades
2. Pursuits
3. Ductions
4. Cover testing in 9 positions of gaze
5. Maddox Rod testing
6. Double Maddox Rod Testing for torsion
7. Eyelid Measurements
a. Ptosis
i. CN III Palsy
ii. Myasthenia Gravis
b. Proptosis
i. Thyroid Eye Disease
8. Pupil Measurements
a. Anisocoria greater in Bright Illumination
i. CN III Palsy
9. Optic Disc Appearance
a. Papilledema

iii. Differential Diagnoses
1. Cranial Nerve III Palsy
a. Neuro-Ophthalmic Emergency
b. Need to rule out aneurysm
2. Cranial Nerve IV Palsy
3. Cranial Nerve VI Palsy
4. Thyroid Eye Disease
5. Myasthenia Gravis
6. Internuclear Ophthalmoplegia
7. Skew Deviation
8. Trauma – muscle entrapment
9. Orbital Tumor

iv. Triage / Immediate Management
1. Timeframe
a. When is it emergent
i. Suspect aneurysm
ii. Suspect acute stroke

    b. When is it urgent
    c. When is it other
2. Testing
    a. Labs
        i. CBC
        ii. Platelet count
        iii. ESR
        iv. CRP
        v. Lyme
        vi. ACE
        vii. Syphilis testing
        viii. Thyroid function tests
        ix. Thyroperoxidase and Thyroglobulin Antibodies
        x. Acetylcholine Receptor Antibodies
    b. Imaging
        i. MRI brain and orbits without and with contrast
        ii. CT brain and orbits without and with contrast
            1. If MRI contraindicated
            2. Preferred study in Trauma
        iii. MRA
        iv. CTA
        v. Catheter Angiogram
        vi. sf EMG
        vii. Chest CT (r/o thymoma in MG and to look for sarcoid)
3. Treatment