Modern Management of Ocular Occlusive Disease
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I. Retinal arterial occlusion.
   A. Associated anatomy.
   B. Anatomy of an embolis.
      1. Thrombus.
      2. Cholesterol (Hollenhorst plaque).
      3. Calcific.
   C. Central retinal artery occlusion (CRAO) / Branch retinal artery occlusion (BRAO).
      1. On the continuum of ischemic optic neuropathy (ION).
         b. Arteritic – Giant cell arteritis (GCA).
      2. Ocular management.
         a. Retinal autoregulation.
            1) Carbogen / Increased intake of carbon dioxide.
            2) "Mashing the eye"
         b. Decreasing the IOP.
            1) Pharmaceuticals.
               a) Timoptic
               b) Iopidine
               c) Diamox
               d) Hyperosmotics
            2) Parecentisis.
      3. Systemic management.
         a. Morbidity and mortality.
            1) Increased mortality from 27% to 56% over 9 yrs.
            2) Decreased life expectancy to 5.5 years from 15.4 yrs.
            3) 3% per year increased risk of stroke.
         b. Lab testing.
            1) Complete blood count (CBC w diff and platelets).
            2) Erythrocyte sedimentation rate (ESR).
            3) General inflammatory C-reactive protein (CRP).
            4) Prothrombin time (PT) / Activated partial thromboplastin time (aPTT).
            5) Lipid Panel.
            6) Two – D Echocardiogram / Transoesophageal echocardiogram.
            7) Carotid Doppler.
            8) BP.
   D. Arteritic ION – GCA
      1. Anatomy.
      2. Lab testing.
         1) ESR.
         2) CRP.
      3. Temporal artery biopsy.
         a. Technique.
b. Pathology.
   1) Internal elastic lamina infiltrated.
   2) Lymphocytes.
   3) Plasma cells.
   4) Multinucleated giant cells.

4. Systemic Management.
   a. IV Methylprednisolone.
   b. Oral steroids.

   a. Increased mortality owed to cardiovascular disease.
   b. Aortic aneurysm formation in 15%.
   1) 50% of patients with thoracic aneurysm die of dissection.
   c. Increased risk of stroke and TIA up to 7%.

II. Retinal venous occlusion.
   A. Associated anatomy.
   B. Anatomical correlates to thrombus formation.
      1. The clotting cascade.
      2. Non-laminar flow.
   C. Nomenclature.
      1. Twig vein occlusion (TRVO).
      2. Branch or quadrant vein occlusion (BRVO).
      3. Hemi retinal vein occlusion (HRVO).
      5. Incomplete vein occlusion: Venous stasis retinopathy.
      6. Ischemic vs. Non-ischemic.
   D. Diagnosis.
      1. Symptoms.
         a. Vision.
         b. Pain (Actually….painless).
      2. Signs.
         a. Variably decreased acuity.
         b. Variably decreased color and brightness.
         c. Variably affected visual field.
         d. Relative afferent pupil defect.
      3. Appearance.
      4. Vascular sheathing.
      5. Collateral vessel filling.
      6. Associated systemic disease.
         a. DM.
         b. HTN.
         c. Coagulopathy.
         d. Hyperviscosity.
         e. Cardiac.
         f. Carotid.
         g. Infectious.
h. Inflammatory.
i. Autoimmune.

7. Intraretinal and iris neovascularization. (Gonioscopy).

E. Management.

1. Find the underlying cause: Systemic laboratory work up along with systemic management.
   1) Complete blood count (CBC w diff and platelets).
   2) Erythrocyte sedimentation rate (ESR).
   3) General inflammatory C–reactive protein (CRP).
   4) Prothrombin time (PT) / Activated partial thromboplastin time (aPTT).
   5) Lipid Panel.
   6) Two–D Echocardiogram / Transesophageal echocardiogram.
   7) Carotid Doppler.
   8) BP.

2. Anticoagulation.

   a. Vision.
   b. Pupils.
   c. Fields.
   d. Intraocular pressure (IOP).

4. Monitor ocular recovery.
   a. Iris (Gonioscopy) and retinal neovascularization (Dilated fundoscopy).
   b. Retinal blood reabsorption / retinal edema (Macular edema).
   c. Serial photography.
   d. Fluorescein angiography.

5. The National Eye Institute of The National Institute’s of Health Guidelines.
   a. The Branch Retinal Vein Occlusion Study (BRVOS).
   b. The Central Retinal vein Occlusion Study (CRVOS).
   c. The Standard of Care vs. Corticosteroid Treatment for Branch Vein Occlusion (SCORE).

6. Differential diagnosis: One diagnosis doesn’t preclude another.
   a. Wet AMD (Any disease with CNV).
   b. Neuroretinitis.
   c. Retinoarteriomeuroaneurysm.
   d. Hypertensive retinopathy.
   e. Cytomegalovirus retinopathy.
   f. Diabetic retinopathy.