Sub-acute Symptoms of Diplopia Prior to a Complete Ischemic 6th Nerve Palsy

After vague complaints of diplopia that could not be elicited with testing in office one month prior, a patient presents with a complete ischemic 6th nerve palsy.

I. Case History
   a. 62 year old African American male with constant binocular diplopia worse at distance & when outside that started one month ago
   b. Previous recent complaint of intermittent over-lapping images worse at distance & when outside that are not true separate images, normal extraocular muscle testing with no diplopia or restriction, & orthophoria in all gazes on Maddox rod; moderate non-proliferative diabetic retinopathy without clinically significant macular edema OU, 1+ nuclear sclerosis OU, epiretinal membrane without traction OU
   c. Type II diabetes mellitus with blood glucose ranging from 125-400 & hemoglobin A1c 7.8 in May 2011, hypertension, hyperlipidemia, congestive heart failure, coronary artery disease, obstructive sleep apnea, benign prostatic hypertrophy, erectile dysfunction, morbid obesity, post-traumatic stress disorder, cocaine abuse, deep vein thrombosis, chronic obstructive pulmonary disease, chronic venous insufficiency, peripheral neuropathy & foot ulcer related to diabetes, onychomycosis, non ST-elevation myocardial infarction
   d. Albuterol, Aspirin, Carvedilol, Docusate, Formoterol, Furosemide, Insulin, Loratadine, Losartan, Metformin, Mometasone, Nicotine gum, Omeprazole, Polyethylene glycol, Psyllium, Simvastatin, Sodium chloride, Thiamine, Trazodone, Vardenafil, Warfarin

II. Pertinent Findings
   a. Clinical exam
      i. Visual acuities 20/25 -2 OD, OS
      ii. Extraocular muscle testing- full range of motion OS, restriction in lateral gaze OD both monocular and binocular, diplopia worse in right gaze
      iii. Cover test- 30-35 prism diopter corrected deviation
      iv. Forced duction testing- negative
      v. Cranial nerve testing- all normal except 6th nerve
      vi. Anterior segment evaluation normal OD, OS
   b. CT scan of head without contrast
      i. No intracranial hemorrhage, mass, or cardiovascular accident

III. Differential Diagnosis
   a. Ischemic 6th nerve palsy
   b. Other etiologies
      i. Mass
      ii. Demyelinating disease
      iii. Pseudotumor cerebri
      iv. Trauma

Nicole Kosciuk
Optometry Resident
Jesse Brown VAMC
v. Systemic inflammatory conditions
vi. Systemic infection
vii. Thyroid related orbitopathy
viii. Myasthenia gravis
ix. Orbital inflammatory pseudotumor
x. Duane syndrome
xi. Giant cell arteritis

IV. Diagnosis and discussion
a. Ischemic 6th nerve palsy
   i. Found in patients with diabetes mellitus, hypertension, or atherosclerosis
   ii. Generally resolves within 3 months
   iii. Symptoms- binocular horizontal diplopia worse at distance
   iv. Signs- abduction deficit, no restriction on forcedduction testing, no proptosis
b. It is possible to see early progression of paresis in an ischemic 6th nerve palsy
   i. One study showed that 2/35 patients with ischemic 6th nerve palsy had initial complete abduction restriction
   ii. Of the 33 with incomplete deficits, 18/33 progressed over one week
   iii. Others progressed over 2-3 weeks

V. Treatment
a. Observe for improvement over 4-12 weeks
   i. One month follow-up of this patient showed 50% improvement objectively (from 30 to 15 prism diopter deviation); however, little to no subjective improvement noted
b. Generally do not need neuroimaging if isolated and ischemic initially
c. 73% of ischemic 6th nerve palsies resolve by 6 months (average is 3 months)
d. Occlusion patching or Fresnel prisms for temporary relief from diplopia
e. Neuroimaging necessary if new neurological signs & symptoms develop, abduction increases, resolution takes longer than 3-6 months
f. Bibliography

VI. Conclusion

Nicole Kosciuk
Optometry Resident
Jesse Brown VAMC
a. Ischemic 6th nerve palsies have the potential to present initially with nonspecific symptoms and no obvious signs eventually leading to the typical findings of a 6th nerve palsy.