Post Trauma Vision Syndrome in the Combat Veteran

Abstract: A 43-year-old Hispanic male with history of traumatic brain injury presents with progressively worsening vision. Vision, stereopsis were decreased and visual field constricted to central 20° OU. Ocular health was unremarkable.

I. Case History

- **Patient demographics**: 43 year old Hispanic male
- **Chief complaint**: Distance/near blur, peripheral side vision loss; he has stopped driving for the past year to avoid accidents. Also reports severe photophobia and must wear sunglasses full-time indoors and outdoors. Patient has had ongoing issues of anger, is easily irritable, frequently bumps into objects, and suffers from insomnia.

- **Ocular history**:
  - Diabetes Type 2 without retinopathy or macular edema
  - Chorioretinal scar of the right eye
  - Cataracts
  - Photophobia
  - Esophoria with reduced compensating vergence ranges
    - Only able to sustain reading for 10 minutes before eye fatigue, strain. Unable to concentrate, skips and loses his place while reading
  - Myopia, Presbyopia

- **Medical history**:
  - Hyperlipidemia, diabetes type 2, sleep apnea, PTSD, chronic headaches, low back pain, vertigo
  - History of TBI/encephalomalacia:
    - 1997: Sustained crown injury via a heavy bar while on ship. Subsequently right side of head hit mortar, then patient fell head first onto metal platform. Underwent loss of consciousness for ~10 minutes.
    - 1999-2002: Exposure to several blasts while in the service.

- **Medications**: amitriptyline, atorvastatin, capsaicin, metformin, naproxen, sumatriptan

II. Pertinent findings

- **Entering DVA (cc)**: OD 20/80-2, OS 20/100-1
  - Current Spectacles: OD +0.75 - 0.25 x 022, OS +0.50 -0.50 x 081
  - Habitual reading glasses: +3.00 OTC
  - Entrance Testing:
    - EOMS: unable to track in far gazes in all quadrants, reports he loses sight of fingertip outside of primary gaze
    - Pupils: PERRL, -APD
    - CVF: constricted 360
    - Stereo: reduced, 200 seconds of arc
    - Color Vision: WNL OU
    - Maddox rod: 12 EP distance/near, reduced compensating vergence ranges
  - BCVA with MRx:
    - Distance: -1.00 DS OU, 20/30 OD, OS, 2BO prism OU
    - Near: 20/30 with +4.00 add at 25 cm working distance
  - Anterior Segment: WNL OU
  - Intraocular pressures: normotensive 11/12mmHg OD/OS
  - Posterior Segment:
    - ONH: C/D: 0.20r OD, 0.30r OS
    - Macula: flat
    - Periphery: chorioretinal scar OD
  - Humphrey Visual Field: OU constricted to central 20 degrees
  - OCT Disc: no nerve fiber layer thinning both eyes
OCT Macula: normal foveal contour, no subretinal/intraretinal fluid

III. Differential diagnosis
- **Primary/leading:** post trauma vision syndrome/functional vision loss
- **Others:** amblyopia, hysteria, malingering, occipital lobe infarction

IV. Diagnosis and discussion
- Functional vision loss refers to any loss of vision that cannot be explained by underlying physiological or organic causes.
- Imbalances can occur between focal and ambient visual processes, affecting balance, posture, ambulation, reading, attention, concentration and cognitive function in general. Post Trauma Vision Syndrome can be the cause of these difficulties.
- Optometrists may be quick to dismiss reduced vision loss without any organic or physiologic explanation. However, it is important to be sensitive and cognizant, especially in post-war veterans, about a patient’s subjective experience, especially as these patients have undergone personality changes and have other psychosocial difficulties.

V. Treatment, management
- Distance and near glasses with base out prism for esophoria, tint
- Pending: tangent screen. vision therapy for ocular tracking, VEP, MRI/MRA, neurology referral
- Low vision rehabilitation consideration: telesopes, mobility training

VI. Conclusion
- Since 2016 there have been 361,092 documented traumatic brain injuries (TBI) with 95% having vision problems. Blast-related TBI is the most frequent injury of the Iraq and Afghanistan conflicts. Many of these combat veterans who have sustained a TBI have undiagnosed, chronic vision problems since a routine ophthalmic exam typically looks normal. Yet, patients commonly report problems such as blurred vision, diplopia, photophobia, trouble focusing, spatial visual processing dysfunction, and decreased peripheral vision. Visual symptoms differ depending on the cause of the injury (ie blunt force vs blast), intensity of the force, and total number of traumatic brain injuries sustained. It is important to listen carefully to their symptoms. Also, most of these patients have posttraumatic stress disorder, which can have overlapping symptoms. The VA uses published screening guidelines to test the binocular system, including vergences, accommodation, pursuit and saccades. Additionally, a questionnaire is given to assess the patient’s functional vision. Even with proper diagnosis and management, patients may not recover fully. Diagnosis of post trauma vision syndrome requires awareness of the problems and special assessment protocols and tools. The rehabilitative efforts should be centered around re-establishing the areas of affected visual function. Prescription prism lenses and tints can improve efficiency of visual function and how an individual processes depth and space. Treatment is often coordinated with other professionals. Proper knowledge and skill in identifying true functional vision loss is essential in providing the right resources, low vision rehabilitation, occupational therapy, and mental health aid, to help these patients acclimate to a better quality of life after their service for our country.