Diagnosis and Management of the Most Common Visual Consequences of Traumatic Brain Injury

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Outline
I. Understanding TBI
   A. Incidence and prevalence of TBI
   B. Age groups affected by TBI
   C. Leading causes of TBI
      1. Blasts in war zones
      2. Falls
      3. Motor vehicle accidents
      4. Assaults

II. What is Traumatic Brain Injury?
   A. TBI is caused by a bump, blow, or jolt to the head or a penetrating head injury that disrupts the normal function of the brain
   B. Graded by severity (chart)
      1. Mild
      2. Moderate
      3. Severe
   C. Indices for determining severity (chart)
      1. Imaging: CT scan
      2. Loss of consciousness
      3. Alteration of consciousness
      4. Post-traumatic amnesia

III. Role of Optometry in Managing TBI Patients
   A. Activities of daily living
      1. Reading
      2. Writing
      3. Driving
      4. Shopping
   B. Active rehabilitation
      1. Identifying vision problems
      2. Managing with lenses, prisms, vision therapy
      3. Patient Education
      4. Interdisciplinary Co-management
C. Post rehabilitation
   1. Long-term care
   2. Communication with patients’ therapists

IV. Visual consequences of TBI
   A. Binocular vision disorders are the most common vision problems in TBI patients
      1. Convergence Insufficiency
      2. Strabismus, exo- and hyper- deviations
      3. Cranial Nerve Palsy
   B. Accommodative Disorders
      1. Approximately 20% of TBI patients have an accommodative dysfunction
      2. Accommodative insufficiency, excess and infacility
   C. Oculomotor Disorders
      1. Saccadic dysfunction
      2. Pursuits dysfunction
   D. Post Trauma Vision Syndrome
   E. Midline Shift Syndrome

V. Patient Presentation: Case Studies
   A. Case #1: Convergence Insufficiency
      1. Symptoms:
         a. Diplopia
         b. Eyestrain
         c. Loss of place while reading
         d. Difficulty concentrating
         e. Blurred vision
         f. Headaches
         g. Fatigue
      2. Diagnostic testing
         a. EOMS
         b. Cover tests, Neutralize with prism
         c. NPC
         d. Smooth, Step, Jump Vergence Testing
         e. Modified Thorington Test
         f. AC/A
      3. Management: Vision Therapy
         a. Brock String
         b. Barrel Card
         c. Free Fusion
   B. Case #2: Accommodative dysfunction: Emerging presbyopia vs accommodative dysfunction
      1. Symptoms
         a. Blurred vision
b. Headaches
c. Eyestrain
d. Reading problems
e. Loss of comprehension
f. Avoidance of near work

2. Diagnostic testing
   a. Amplitude of Accommodation: Pushup Method, MLB
   b. BAF/MAF
   c. NRA/PRA
   d. MEM
   e. Fused Crossed Cylinder

3. Management
   a. Added Plus
   b. Vision Therapy
   c. Patient education

C. Case #3: Left Superior Oblique Palsy
   1. Symptoms:
      a. Neck pain (Head tilt)
      b. No visual complaints
         i. Suppression
         ii. Head tilt masking diplopia
   2. Diagnostic testing
      a. EOMS (Video)
      b. CT
      c. Red lens
      d. Worth Four Dot
      e. Parks three step
   3. Management
      a. Prisms
      b. Partial lens occlusion
      c. Physical therapy

D. Case #4: Visual Midline Shift Syndrome
   1. Symptoms
      a. Dizziness
      b. Poor balance
      c. Nausea
      d. Spatial disorientation—compression and expansion
      e. Perception of tilted walls
      f. Bumping into doorways and objects when walking
      g. Confusion
      h. Lack of awareness of surroundings
      i. Fear of crowded places
   2. Diagnostic Testing
      a. CEE
b. BV testing
c. Pass a wand in front of the patient
d. Laterally and transversely

3. Management
   a. Yoked Prism
      i. Base toward the affected side: to counter the expansion and compression of space, shifting midline perception back to centered position
      ii. Base opposite the affected side: to re-train the ambient visual process
   
   b. (Video)
c. Active vision therapy/occupational therapy
d. Frequent follow ups until resolution

E. Case #5: Post Trauma Syndrome

   1. Symptoms
      a. Diplopia
      b. Blurred near vision
      c. Eye Strain and fatigue
d. Headaches
e. Photophobia
f. Perceived movement of stationary objects
g. Hallucinations

2. Diagnostic testing
   a. CEE
   b. BV testing
c. VEP

3. Management
   a. Binasal Occlusion
   b. Base in Prism

VI. Medical Coding

A. Initial TBI Vision Exam

   1. Primary diagnosis code:
      a. Chief Complaint
   2. Secondary diagnosis codes:
      a. V-code (V15.52)
b. Severity of TBI
   3. Late-effect code (907.0)
      a. Residual effect (condition produced) after acute trauma
      b. No time limit

B. Procedure codes

   1. Type of patient: New, Established (92002, -04, -12, -14)
   2. Level of exam: Comprehensive, Intermediate
   3. Procedures
      a. Refraction (92015)
b. Spectacle fitting (92340-2) with prisms

c. Pleoptic/orthoptic training (92065)

d. Sensory motor evaluation (92060)

VII. Conclusion
   A. Clinical Pearls
   B. Resources