Psychogenic non-epileptic seizures and its visual consequences.

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Abstract (32 words)

Psychogenic non-epileptic seizures (PNES) is a consequence of traumatic brain injury and post-traumatic stress disorder. This case discusses how to diagnose and treat visual sequelae of PNES: visual field constriction, binocularity and accommodative dysfunction.

I. Case History

- Patient demographics
  - 39 year old Caucasian male
- Chief complaint
  - Right eye has blurry vision, haze and “spots” all day
- Ocular history
  - Unknown, first eye exam at West Haven VA
  - Does not have old records from previous eye exams
- Medical history
  - Mitral valve disorders
  - Hyperostosis
  - Obesity
  - Psychogenic non-epileptic seizures
  - Major depressive disorder (MDD)
  - Anxiety
  - Psychologic conversion disorder
  - Post-traumatic stress disorder (PTSD)
  - Traumatic brain injury
    - Combat engineer in Korea: was hit on top of skill in 1996 and received 12 stitches
    - Experienced 5 blasts between 1994 - 1998
    - Hit his head on bridge pylon in 1995, patient lost consciousness for 2-3 minutes
- Medications
  - Citalopram Hydrobromide 40mg ½ tablet QD
  - Folic acid 1mg QD
  - Gabapentin 60mg TID
  - Metoprolol Succinate 10mg QD
  - Sumatriptan Succinate 50mg PRN
  - Terazosin HCl 1mg QD
  - Topiramate 100mg BID
  - Warfarin 5mg QD

II. Pertinent findings
Clinical

- BCVA: 20/20 OD, OS, OU
- Near binocular testing
  - Vertical phoria: 2.5 prism diopters right hyperphoria
- Near accommodative testing
  - Negative relative accommodation: +2.00
  - Positive relative accommodation: -1.00
  - Accommodation: 3.75D OD, 4.00D OS
  - Accommodative and vergence facility testing
    - OD: 5 cpm, OS: 8 cpm, OU: suppresses OS with +/- 1.00
    - Developmental eye movement (DEM) ratio: 1.55
- Dilated fundus exam essentially normal OU
- Frequency doubling technology (FDT) perimetry:
  - OD: no defects
  - OS: few depressed points superior temporal which expanded to superior temporal and inferior temporal quadrants; fields are repeatable
- Humfrey visual field (HVF) 30-2
  - OD: poor reliability; superior arcuate defects
  - OS: good reliability; superior arcuate defects
- Tangent screen at 2 meter
  - OD: has 20-25 degrees in all quadrants
  - OS: has 20-25 degrees in all quadrants; except in superior field has minor constriction at about 18 degrees at 65, 90 and 115
- Tangent screen at 1 meter
  - OD: overall constriction in all directions between 10-15 degrees; inferior temporal field shows greater constriction between 5-10 degrees
  - OS: overall minor constriction between 10-15 degrees in all directions
- Goldmann visual field
  - OD: overall constriction with greatest constriction superiorly; superior 10 degrees, temporal 55 degrees, nasal 35 degrees and inferior 43 degrees
  - OS: overall constriction with greatest constriction superiorly; superior 20 degrees, temporal 50 degrees, nasal 35 degrees and inferior 43 degrees
- Goldmann visual field with lids taped
  - OD: overall constriction with greatest constriction superiorly; superior 30 degrees, temporal 55 degrees, nasal 42 degrees and inferior 50 degrees
  - OS: overall constriction with greatest constriction superiorly; superior 30 degrees, temporal 62 degrees, nasal 45 degrees and inferior 52 degrees

Physical

- PTSD
- PNES
- Anxiety
- MDD

Laboratory studies

- Metabolic and toxic causes to rule out cause of seizures
  - Impression: normal
- Prolactin and creatinine kinase levels
Impression: normal

Radiology studies
- Magnetic Resonance Imaging (MRI) showed hyperostosis of bone

Impression: variant of meningioma, benign finding

Video-electroencephalography (EEG) showed PNES signs
- Impression: patient hospitalized for this for monitoring to differentiate between PNES and epileptic seizures

III. Differential diagnosis
- Primary/leading
  - PNES
- Others
  - Epileptic seizures
  - Topiramate side effects

IV. Diagnosis and discussion
- PNES are episodes of movement, sensation or behavior that are similar to epileptic seizures but without neurologic origin. They are usually caused by psychological distress. It is diagnosed by video-electroencephalography monitoring. PNES and PTSD can cause visual disturbances such as atypical vision loss in one or both eyes, constricted visual fields, accommodative/binocualr dysfunction, and abnormal pupillary reaction.
- Epileptic seizure is one of the main differential diagnoses. This was ruled out by doing the EEG video monitoring which differentiates PNES from epileptic seizures. PNES patients have awareness during these episodes and are affected by bystanders; anxiety playing a major role in causing one of these episodes. Epileptic seizures are predicted by abrupt onset, eye opening/widening and confusion/sleep.
- According to the study by Mandal et al., Topiramate can cause ocular side effects such as angle closure, ocular pain, headaches, mydriasis, and visual field defects to name a few. However, Topiramate is not the cause of this patient’s visual field defect since the Topiramate was prescribed after the onset of symptoms.

V. Treatment, management
- Treatment and response to treatment
  - Cognitive behavioral therapy is the best treatment for PNES. It reduces anxiety, depression and PTSD.
  - Medical treatments include Gabapentin and Topiramate, anti-seizure and anticonvulsant medications, respectively.
  - A study by Digre and Brennan shows that tints are helpful in relieving photophobia in some patients with neurologic disorders. Tints can therefore decrease symptoms of headaches, migraines, blur and pain. Most TBI patients prefer blue tints or a combination of blue-grey tint.
  - Vision therapy (VT) helps with accommodative dysfunction, oculomotor dysfunction, decrease DEM ratio and increase reading time for patients
    - VT helped this patient with his symptoms of reduced concentration ability, poor reading concentration and comprehension. Lessening these symptoms greatly improved this patient’s lifestyle.
VI. Conclusion

- TBI can have many devastating consequences like PNES, PTSD and anxiety. This can lead to visual obscurations, visual auras, blurry vision, dry eye and visual field defects. As optometrists, we should be aware of these consequences in order to properly rule out ocular pathology. This case truly highlights the importance of co-managing patients with various other specialties such as psychology, neurology, and psychiatry.

Bibliography