



Tick Talk: management of Visual Symptoms Following Autoimmune Encephalitis

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Chief Complaint

- The 16-year-old white female presented for a sensorimotor evaluation with a complaint of blurry vision at distance and near, OS>OD. She also noted a decrease in double vision, motion sickness, visual snow, and a decrease in visual processing
- Onset of symptoms were concurrent with systemic symptoms including astattis and OCD tendencies in November of 2019

Case History

- Medical history:
 - Diagnosis of tick-borne bartonella, autoimmune encephalitis, and Pediatric Acute-onset Neuropsychiatric Syndrome (PANS/PANDAS)
- All other case history was
- Medications
 - Plaquenil
 - Clarithromycin
 - Rifampin
 - Valtrex
- Xyzal
- Ibuprofen
- Lorazepam
- Meclizine
- Promethazine
- Monthly IVIg infusions

Entrance testing

- Acuties (sc)
 - OD 20/50-2
 - OS 20/150-
 - OU 20/70-
- The patient had no habitual correction
- PERRLA(-)APD
- CFV: FTFC OD/OS
- EOMS FROM OU
- Slit lamp evaluation of the anterior and posterior segments were unremarkable

Sensorimotor evaluation

- Cover test
 - Dist: 2 XP
 - Near: 12 IAXT'
- NPC: 10"/14"
- Worth 4 dot: intermittent left suppression
- MT in 9 gazes revealed a consistent 2 XP and a 2 R Hyper
- Subjective refraction:
 - OD: -0.50-0.50x180
(20/20, isolated letters)
 - OS: -1.25-0.50x090
(20/25, isolated letters)
- Binocular stability testing showed suppression tendencies
- Tracking abilities were

Assessment and plan

Vision therapy

The patient and her mother were educated on the potential benefit of a course of vision therapy exercises focusing on accommodation, ocular motility and fixations, binocularity, and visual thinking. It was recommended the patient strive for 2 days a week of in-office therapy with home activities.

Stress-reducing lenses of +0.50 OU were recommended for all near work

“I told you something was wrong with my eyes!”

Specific Goals of therapy

Visual/vestibular
disconnect
Fragile binocularity

Visual snow

Decreased visual
information processing
Motion sensitivity

Auto-immune encephalopathy

of the brain and CNS in which the immune system attacks neuronal autoantigens

- Symptoms can range from psychiatric changes to autonomic dysregulation to GI upset as any part of the CNS can be affected
- Common symptoms include headache, fever and nausea
- Treatment options include:
 - Steroids
 - Intravenous immunoglobulin infusions
 - Plasma transfusions

PANS/ PANDA S

- Pediatric Acute-onset Neuropsychiatric Syndrome (PANS) and Pediatric Autoimmune Neuropsychiatric Disorder Associated with Streptococcal Infections (PANDAS) are a subtype of autoimmune encephalitis
- Prevalence is estimated to be 1 in 200 children in the US
- Treatment options are similar to those mentioned above for autoimmune encephalitis

PANS/ PANDA S

clinical presentation. Sudden,
acute onset is key

- OCD like symptoms (seen in all patients, onset of 24-48 hrs)
- New, severe symptoms must be present in two of the following categories:
 - Anxiety
 - Behavioral regression
 - Sensory/motor abnormalities
 - Decrease in school performance secondary to ADHD-like symptoms or changes in memory or cognitive abilities
- Known visual symptoms include sensitivity to light, visual hallucinations, or changes in visual perception

Specific Goals of therapy

Visual/vestibular
disconnect
Fragile binocularity

Visual snow

Decreased visual
information processing
Motion sensitivity

BIOC

Purpose: To improve accommodative flexibility

Materials: Eye patch, minus lenses, target (Marsden Ball)

- Place an eye patch over one eye and a minus lens bisecting the pupil of the other eye. The patient should be able to appreciate two images of the target.
- Every 6-7 seconds, the

4 Chart Drills

Purpose: To improve accuracy of eye movements

- Place an eye patch over one eye and have the patient read the first letter of the upper left chart, followed by the first letter of the upper right chart, then the lower right chart, then the lower left chart.

Materials: Eye patch, 4 small Hart Charts placed in a square formation

Vestibuloocular reflex (VOR)

Purpose: To improve pursuit eye movements and ocular/vestibular processing

Materials: Mirror, eye patch

- The patient will face the mirror with one eye patched. Using their own eye as a fixation point, the patient will slowly move their head side to side. Start with small motions and slowly increase.

Overhead vectogram

Purpose: To engage peripheral fusion and stereopsis

- The patient will stand ~10 feet from the projected image with polaroid glasses on.
- Method 1: Slowly increase the demand as the patient remains stationary until a break is achieved

Materials: Stereo vectograms, polaroid glasses, overhead projector

Brock string on window with peripheral awareness

~~Purpose: To provide feedback to the patient on how their eyes are working together at various distances while maintaining awareness of what is around them~~

Materials: An 8-10' string with 5 beads dispersed along it, an attachment point for the window

- Method 1: Place 1 bead about 1 foot from the window anchored side of the string. The patient should begin 12-16 inches behind the bead, with the string held up to the tip of their nose
- Once the patient can visualize one bead with two strings coming towards them, they will

Brock string on window with peripheral awareness

~~Purpose: To provide feedback to the patient on how their eyes are working together at various distances while maintaining awareness of what is around them~~

Materials: An 8-10' string with 5 beads dispersed along it, an attachment point for the window

- Method 2: Place 5 beads at similar intervals along the string. Begin at the end of the 8 foot string with the string held to the bridge of the nose. Begin by focusing on the farthest/closest bead
- Once the patient can visualize one bead with two strings coming towards them, they will

Brock string on window with peripheral awareness

~~Purpose: To provide feedback to the patient on how their eyes are working together at various distances while maintaining awareness of what is around them~~

Materials: An 8-10' string with 5 beads dispersed along it, an attachment point for the window

- Method 3: Place 5 beads at similar intervals along the string. Begin at the end of the 8 foot string with the string held to the bridge of the nose. Begin by focusing on the farthest/closest bead
- Once the patient can visualize one bead with two strings coming towards them, they will

Follow up

The patient presented for a vision therapy progress evaluation. She reported an improvement in being able to fix her eyes when they felt crossed

- She also reported visual snow symptoms seemed to be more noticeable than at initial presentation
- Testing revealed improved NPC and less tendency towards suppression
- Subjective refraction found an Rx of -0.50 DS OD and -1.50 DS OS with acuity of 20/20 OD/OS

Conclusions

- Immune encephalopathy and PANS/PANDAS can lead to many significant visual and ocular symptoms
- Acknowledging the patient's experience can go a long way
- Vision therapy is an excellent option to help with symptoms
- It is important to consider ocular side of effects of systemic treatments as well

Resources

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