

## Neuro-Optometric Management of Visual Snow Syndrome

M.H. Esther Han, OD, FOVDR, FAAO, Dipl ABO

**2 hours**

### **Description:**

Visual Snow Syndrome (VSS) includes visual and non-visual based problems. Visual snow is the perception of “snow” and/or television monitor “static”. This course reviews a specific diagnostic protocol and reviews common therapeutic options.

### **Course Objectives:**

- Recognize and diagnose a patient with Visual Snow Syndrome.
- Identify the common symptoms associated with Visual Snow Syndrome
- Perform the Visual Snow Syndrome (VSS) Symptom Survey
- Recognize the common clinical findings associated with the patient with Visual Snow Syndrome
- Understand and recommend the common treatment options for the patient with Visual Snow Syndrome.
- Compare and Contrast the clinical efficacy of the different treatment options as described in the research literature.

### **Outline:**

#### **PART 1: WHAT IS VISUAL SNOW SYNDROME (VSS)**

- A. What is Visual Snow?
  1. “The perception of “snow”, dots, pixelated fuzz, bubbles, and/or television monitor “static” in the visual field foreground.
  2. Visual Snow Simulator: <https://visionsimulations.com/visual-snow.htm>
- B. A visual information processing dysfunction
  1. Imaging characteristics
    - a. fMRI
    - b. EEG
- C. Characteristics of patients with Visual Snow Syndrome (VSS)
  1. Gender preference: None
  2. Mean age of onset: 26 years
  3. Constant (92%) or episodic symptoms
  4. Chromatic or monochromatic symptoms
  5. Provoking environments

- a. Bright illumination
- b. Dim illumination
- D. The VSS Symptom Survey: Academic Optometric Setting
  - 1. Primary Visual Symptoms
    - a. Palinopsia
      - 1. Academic: 86%
      - 2. Private Practice: 85.2%
    - b. Entoptic Phenomena
      - 1. Academic: 79%
      - 2. Private Practice: 51.2%
    - c. Photosensitivity
      - 1. Academic: 74%
      - 2. Private Practice: 74.1%
    - d. Nyctalopia
      - 1. Academic: 68%
      - 2. Private Practice: 33.3%
  - 2. Secondary Visual Symptoms
    - a. Photopsia
      - 1. Academic: 63%
      - 2. Private Practice: 29.6%
  - 3. Non-Visual Symptoms
    - a. Migraine
      - 1. Academic: 59%
      - 2. Private Practice: 55.5%
    - b. Tinnitus
      - 1. Academic: 62%
      - 2. Private Practice: 48.1%

E. VSS Differential Diagnoses?

- 1. Floaters? Flashes?
- 2. Photophobia/photosensitivity & visual scintillations?
- 3. Palinopsia? Afterimages? Flashes of different colors?
- 4. Hallucinogen persisting perception disorder (HPPD)

**PART 2: EVALUATION OF VISUAL SNOW SYNDROME: Basic Considerations**

A. Case history, Visual Snow Syndrome Survey, BIVSS, CISS,

- 1. Previous evaluations?
  - a. Previous examinations by ophthalmologists, neuro-ophthalmologist, neurologist
- 2. Previous treatments?
  - a. Medications?
  - b. Lenses?

B. Medical History

- 1. History of neuro-inflammation, infections, concussion, migraines, dysautonomia, POTs, Ehlers Danlos, MCAS,
- 2. Anxiety

- 3. Neuro-developmental: Spectrum disorders (Autism)
- C. Refractive considerations (Han retrospective)
  - 1. Normal uncorrected visual acuity (44%)
  - 2. Myopia (34%)
  - 3. Hyperopia (10%)
- D. Sensorimotor Considerations (% of each based upon Han and Tannen's different publications)
  - 1. Accommodative
    - a. Academic: 53%
    - b. Private Practice: 54.5%
  - 2. Vergence
    - a. Academic:
      - 1. Convergence Insufficiency: 38%
      - 2. Convergence Excess: 10%
    - b. Private Practice:
      - 1. Convergence Insufficiency: 51.9%
      - 2. Convergence Excess: 33.3%
  - 3. Oculomotor (Based upon Right Eye Test, DEM, Visual Tracing Test)
    - a. Academic: 38%
    - b. Private Practice: 59.3%
- E. Neuro-Optometric Rehabilitation Specific:
  - 1. Sensitivity Considerations
    - a. Photosensitivity:
      - 1. Chromatic filter evaluation and trial: Concept of percent reduction
      - 2. Optometric phototherapy evaluation
    - b. Motion Sensitivity: Vestibular
- F. Common Treatment Modalities:
  - 1. NORT Clinical Pearls
    - a. Opaque patches
    - b. POTS patients: Not standing and may even need to have them lie down for a break
  - 2. Chromatic Filters or Overlays
    - a. Color tint settings on electronic devices
  - 3. Non-optometric Considerations: Other referrals?
    - a. Anxiety
    - b. Auditory sensitivity
    - c. Diet, nutrition
    - d. POTS, Long COVID, Ehlers Danlos Syndrome
- G. Treatment Efficacy:
  - 1. Saccadic Suppression Therapy
    - a. Tannen
  - 2. NORT
    - a. Tsang & Shidlofsky (2022)
  - 3. Chromatic Filters
    - a. Han
  - 4. Non-optometric treatments

## 1. Pharmacological Treatments

### Q&A / Discussion

#### REFERENCES:

- Ciuffreda KJ, Han ME, Tannen B, Rutner D. Visual snow syndrome: evolving neuro-optometric considerations in concussion/mild traumatic brain injury. *Concussion*. 2021; 6(2): CNC89.
- Ciuffreda KJ, Tannen B, Han MHE. Visual Snow Syndrome (VSS): An evolving neuro-optometric clinical perspective. *Vision Dev & Rehab*. 2019; 5(2):75-82.
- Han ME, Ciuffreda KJ, Rutner D. Historical, diagnostic, and chromatic treatment in Visual Snow Syndrome: A retrospective analysis. *Optom Vis Sci*. 2023; 100(5):328-333.
- Schankin CJ, Maniyar FH, Digre KB, Goadsby PJ. Visual snow – a disorder distinct from persistent migraine aura. *Brain*. 2014; 137; 1419–1428.
- Tannen B, Brown J, Ciuffreda KJ, Tannen NM. Remediation of visual snow (VS) and related phenomena in a neuro-optometric practice: A retrospective analysis. *Vision Dev & Rehab*. 2022; 8(2):105-13.
- Tsang T, Shidlofsky C, Mora V. The efficacy of neuro-optometric visual rehabilitation therapy in patients with visual snow syndrome. *Front. Neurol*. 2022; 13:999336.