Visual Snow Syndrome and Its Relationship to Tinnitus

Matthew Renze

International Conference on the Management of the Tinnitus and Hyperacusis Patient
February 7, 2014
Other Visual Symptoms

- Vibration in text
- Trailing images
- Bright-light issues
- Night-vision issues
- Halos at night
Other Auditory Symptoms

Loud-noise issues
Conversation issues
Environmental-noise issues
Ear noise with volume changes
Other Tactile Symptoms

Pulsating buzzing
Fine tremors
Central Sensitization

Brain

Sensitized Somatosensory Cortex

Pain, Touch, Fatigue, Taste, Dizzy, Smell, Nausea, Barometric, Temperature, Pressure

Spinal Cord

Damaged Peripheral Input

Skin, Balance, Gut, Muscle, Vascular, Vision, Joints, Hearing, Taste, Small

Injury, Illness, Disease, Surgery, Repetitive, Research

Source: Dr. Sletten - Central Sensitization Syndrome
https://youtu.be/8defN4ilbho
‘Visual snow’ – a disorder distinct from persistent migraine aura

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Visual Snow

“continuous tiny dots in the entire visual field similar to noise of an analog television”

Source: Brain 2014: 137; 1419–1428
http://brain.oxfordjournals.org/content/137/5/1419.long
Visual Snow Syndrome

Palinopsia
Floaters
Blue-field entoptic phenomena
Photophobia
Nyctalopia
Tinnitus

Source: Brain 2014: 137; 1419–1428
http://brain.oxfordjournals.org/content/137/5/1419.long
2014 Wolff Award Paper

The Relation Between Migraine, Typical Migraine Aura and “Visual Snow”

Christoph J. Schankin, MD; Farooq H. Maniyar, MD; Till Sprenger, MD; Denise E. Chou, MD; Michael Eller, MD; Peter J. Goadsby, MD, PhD

Objective.—To assess the relationship between the phenotype of the “visual snow” syndrome, comorbid migraine, and typical migraine aura on a clinical basis and using functional brain imaging.
What does this have to do with tinnitus?
## Associated Visual Snow Symptoms

<table>
<thead>
<tr>
<th>Symptom</th>
<th>Study 1</th>
<th>Study 2</th>
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Source: Brain 2014: 137; 1419–1428
http://brain.oxfordjournals.org/content/137/5/1419.long
Visual Snow: a Potential Cortical Hyperexcitability Syndrome

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Clinical Study

Visual snow: A thalamocortical dysrhythmia of the visual pathway?

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b Department of Ophthalmology, Prince of Wales Hospital, High Street, Randwick, NSW, Australia
c Department of Neuro-Ophthalmology, Moorfields Eye Hospital, London, United Kingdom
Opinion
An Integrative Tinnitus Model Based on Sensory Precision

William Sedley, 1,* Karl J. Friston, 2 Phillip E. Gander, 3 Sukhbinder Kumar, 2 and Timothy D. Griffiths 1,2,3

Tinnitus is a common disorder that often complicates hearing loss. Its mechanisms are incompletely understood. Current theories proposing pathophysiology from the ear to the cortex cannot individually – or collectively – explain the range of experimental evidence available. We propose a new framework, based on predictive coding, in which spontaneous activity in the subcortical auditory pathway constitutes a ‘tinnitus precursor’ which is normally ignored as imprecise evidence against the prevailing percept of ‘silence’. Extant models feature as contributory mechanisms acting to increase either the intensity of the precursor or its precision. If precision (i.e., postsynaptic gain) rises sufficiently then tinnitus is perceived. Perpetuation arises through focused attention, which further increases the precision of the precursor, and resetting of the default prediction to expect tinnitus.
1) Deafferentation
2) Spontaneous ascending activity
3) Deficient noise cancelling
4) (Thalamo)cortical coherence
5) GABA-ergic deficiency
6) Enhanced lateral communication
7) Cholinergic excess
8) Persistent prediction errors
9) Silence prediction over-ridden
10) Cross-modal interactions
11) Reinforcement through attention
Cortical Hyperexcitability

Thalamocortical Dysrhythmia

Predictive Coding
Symptom Aggravators

Stress
Lack of sleep  Excessive computer use
Cold/flu  Too much sodium
Alcohol  Too much sugar
Caffeine
Meditation reduces pain-related neural activity in the anterior cingulate cortex, insula, secondary somatosensory cortex, and thalamus

Source: Frontiers in Neurology 2014;5:1489
http://www.ncbi.nlm.nih.gov/pmc/articles/PMC4460809/
Current Research

Visual Snow – a disorder distinct from persistent migraine aura
http://brain.oxfordjournals.org/content/137/5/1419.long

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Visual snow: A thalamocortical dysrhythmia of the visual pathway?
http://www.jocn-journal.com/article/S0967-5868(15)00653-0/fulltext

An Integrative Tinnitus Model Based on Sensory Precision
https://doi.org/10.1016/j.tins.2016.10.004
Future Research

Third study completed
Fourth study in the works
Research is crowd funded

www.eyeonvision.org
Help Cure Visual Snow

https://www.gofundme.com/visual-snow
The Science of Mindfulness: A Research-Based Path to Well-Being

Professor Ronald D. Siegel
Harvard Medical School/Cambridge Health Alliance
The Science of Mindfulness:
A Research-Based Path to Well-Being

Professor Ronald D. Siegel
Harvard Medical School/Cambridge Health Alliance

Vipassana Meditation
As Taught by S. N. Goenka

William Hart

www.thegreatcourses.com

www.dhamma.org
Conclusion

1.
2.
3.
Conclusion

1. Tinnitus is associated with VSS
2. 
3.

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2. VSS provides insight into tinnitus
3. 
Conclusion

1. Tinnitus is associated with VSS
2. VSS provides insight into tinnitus
3. Symptoms can be managed
It is possible to be in physical, mental or emotional pain, but to not be suffering from it.

Suffering is how we respond to pain.
Contact Info

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Thank You! : )