



## Quantitative EEG and swLORETA Analyses

### PATIENT INFORMATION

**Name:** Leonid Ber  
**Age:** 56.65  
**Gender:** M  
**Handedness:**  
**Condition:** Eyes-Closed

### RECORDING

**Date:** 04/01/2022  
**Test Site:** Chicago, IL  
**Analysis Length:** 03:24  
**Ave. SH Reliability:** 0.99  
**Ave. TRT Reliability:** 0.96

### Active Conditions

### ICD-10-CM

Directed energy exposure—Primary Dx	none
Unspecified Vestibular dysfunction – Secondary Dx	H81.93
Traumatic encephalopathy, unspecified – Secondary Dx	G92.9
Fatigue, other (central)	R53.83

**HISTORY:** Mr. Ber is a 56-year-old male with a diagnosis of traumatic encephalopathy and vestibular dysfunction secondary to directed energy exposure. He is currently having episodes of dizziness/vertigo, vibrations, unsteadiness, tremor, and brain fog/cognitive impairment. The incidents began in the summer of 2019 at his primary home in Bloomindale, IL. Since that time, he has experienced these symptoms daily wherever he goes, but with greatest severity at his primary home. In June of 2020, he was diagnosed with right unilateral vestibular hypofunction (aka acquired neurosensory dysfunction) by an otoneurologist (Dr. Hoffer, University of Miami, who examined and diagnosed U.S. Embassy personnel returning from Cuba with “Havana Syndrome”). In May of 2021, he was diagnosed with traumatic encephalopathy by a neurologist (Dr. Hac at Northwestern University in Chicago). He underwent an MRI scan on 01/04/2021 in which Dr. Rusinak reported remote infarcts in the bilateral caudate nuclei, right greater than left, suggesting mild chronic microvascular ischemic disease in the bilateral frontal white matter. Thus far, a therapeutic pathway has not been identified for episodic flare-ups lasting hours and even several days. These episodes are progressively getting more intense, accompanied by a decline in cognitive functions. Collectively, his combined symptomatology varies unpredictably day-by-day, with fluctuations in frequency, duration, and severity. He has not been able to work full time since June 2020, being unable to meet most any kind of routine physical and cognitive work demands on a predictable, reliable, and consistent basis.

**SUMMARY:** swLORETA functional neuroimaging identified significant dysregulation (hypofunction pattern) present in the left primary somatosensory cortex and right auditory association cortex in the temporal lobe. Somatotopic organization of the somatosensory cortex is involved sensory-discriminative aspects of pain. The auditory association cortex is involved in higher order processing of sound and language. swLORETA functional connectivity analyses revealed a global pattern of decreased information flow (hypoconnectivity pattern) between nodes of many subnetworks including the mood (depression and anxiety) network, attention network, executive functioning network, central

autonomic network, and pain network. Dysregulation also involved the cerebellum which coordinates precise motor actions and vestibular balance. In addition, DTI tractography modeling showed white-matter tracts involved in higher order cognitive function and interhemispheric communication between frontal cortical regions. Taken together, the extent of abnormal electrical patterns found are consistent with marked functional limitations and physical/cognitive impairments. Findings are consistent with right unilateral vestibular hypofunction and symptoms linked to neurological and peripheral autonomic dysfunction. The findings in this report objectively confirm and evidences the combined physical/physiological and psychological nature of his symptoms.