

**Department of Surgery**  
**2026 Research Day**  
**6<sup>th</sup> May 2026 (Wednesday) | 7 am – Noon | MART Auditorium**

**Title:**

**Evaluating the Prevalence of Inner Ear Symptoms in Spontaneous Intracranial Hypotension and Accompanying Comorbidities**

**Author(s) and Affiliations:**

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**Background:**

Spontaneous Intracranial Hypotension (SIH) is a rare disease characterized by low cerebrospinal fluid (CSF) pressure, usually due to a CSF leak. Communication between CSF and the inner ear via the cochlear aqueduct may theoretically transmit intracranial pressure changes to the perilymphatic space, potentially altering inner ear fluid dynamics. While studies have characterized the prevalence of inner ear symptoms in SIH patients, risk factors for developing such symptoms have not been examined. This study aims to determine the prevalence of inner ear symptoms in patients with SIH on a larger scale and determine comorbid conditions that may predispose these patients to developing these symptoms.

**Methods:**

Patients with SIH (ICD G96.81) were identified using TriNetX. Cohorts of patients diagnosed with SIH as well as tinnitus, vertigo, benign paroxysmal vertigo (BPV), Ménière's disease, hearing loss, and sudden hearing loss were created to determine the prevalence of each symptom. Cohort analyses were performed to compare demographics and comorbidity rates between SIH patients and patients with SIH as well as tinnitus, vertigo, and hearing loss. Patients with SIH under 50 were also compared to patients with SIH and hearing loss under 50.

**Results (or Preliminary Results):**

5,847 patients with SIH were identified. 11.42% had tinnitus, 4.26% had benign paroxysmal vertigo (BPV), 16.49% had vertigo, 0.82% had Ménière's disease, 11.11% had hearing loss, and 0.85% had sudden hearing loss. SIH was associated with elevated odds of developing hearing loss in patients under 50 (OR 6.90, 95% CI 5.94-8.02,  $p < 0.001$ ). SIH patients with gastroesophageal reflux disease (GERD) and vitamin D deficiency had higher odds of experiencing tinnitus, vertigo, and hearing loss. Chronic kidney disease, chronic obstructive pulmonary disease, heart failure, type 2 diabetes mellitus, and hypertension were found to increase the odds of experiencing vertigo and hearing loss.

**Conclusions (or Preliminary Conclusions):**

SIH is associated with a notable prevalence of auditory and vestibular symptoms. Patients with SIH under 50 demonstrated significantly higher odds of developing hearing loss compared to those without SIH. Several comorbidities—including GERD and vitamin D deficiency—were associated with increased odds of inner ear-related symptoms. These findings support a potential relationship between reduced CSF pressure and inner ear dysfunction.