Association Between Treatment of Pro-Inflammatory Conditions and Vestibular Schwannoma Risk

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Background

Vestibular schwannoma (VS) is a benign cranial nerve tumor with unclear etiology. Previous studies have suggested that inflammation and immune dysregulation may contribute to the development of VS. Type 2 diabetes mellitus (DM2), dyslipidemia, and rheumatoid arthritis (RA) are common chronic conditions characterized by systemic inflammation and are frequently treated with medications that may modify inflammatory pathways. This study evaluated whether treatment of these pro-inflammatory conditions influences the subsequent risk of developing VS. To our knowledge, this represents the largest study of its kind examining treatment effects on VS risk.

Methods

- Retrospective cohort study conducted using the TriNetX Research Network.
- Compared treated and untreated patients with type 2 diabetes mellitus (DM2), dyslipidemia, or rheumatoid arthritis (RA) to evaluate subsequent vestibular schwannoma (VS) risk.
- DM2 treatments included metformin, insulin, DPP-4 and SGLT2 inhibitors, sulfonylureas; dyslipidemia treatment included statins, fibrates, ezetimibe, niacin; and RA treatment included DMARDs, NSAIDs, and corticosteroids.
- Patients with a prior diagnosis of VS were excluded.
- Treated and untreated cohorts were propensity score matched 1:1.DM2 and dyslipidemia analyses were mutually adjusted for the presence of the other condition.

Results

Among 2,907,162 matched patients per diabetes group, the risk of VS was similar between treated and untreated cohorts (0.019% vs. 0.018%, p = 0.40). In the dyslipidemia group (6,309,934 patients per group), treatment was associated with a higher risk of VS (0.030% vs. 0.022%; OR = 1.32, 95% CI: 1.23–1.41; p < 0.0001). In the rheumatoid arthritis group (247,884 patients per group), treated patients had an elevated VS risk compared to untreated patients (0.046% vs. 0.022%; OR = 2.07, 95% CI: 1.50–2.86; p < 0.0001).

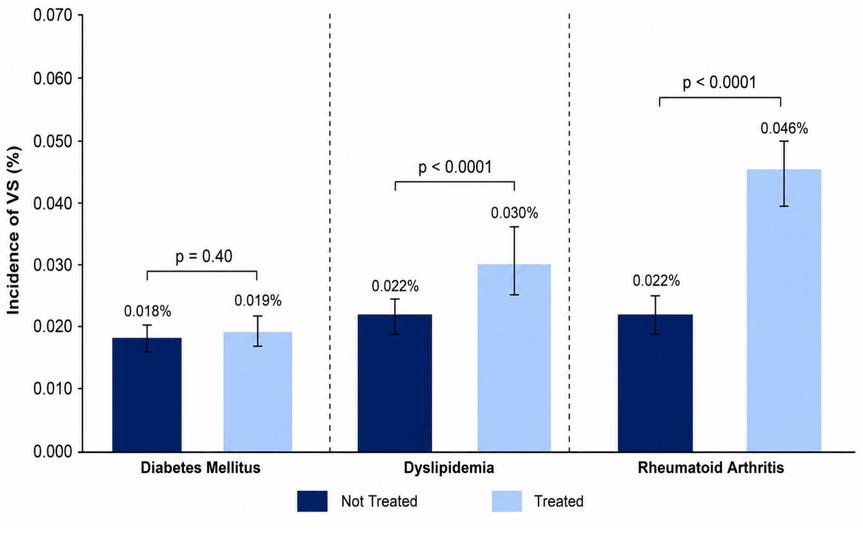


Figure 1. Incidence of Vestibular Schwannoma Among Treated and Untreated Patients With Type 2 Diabetes Mellitus, Dyslipidemia, and Rheumatoid Arthritis

Conclusions

Treatment of DM2 did not significantly impact VS risk. Surprisingly, treatment for dyslipidemia and RA was associated with increased risk, potentially due to confounding by severity, treatment selection, or surveillance bias. This study highlights a potential association between treatment of pro-inflammatory conditions and VS risk that warrants confirmation through future research.

References

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