

Objectifs

Tinnitus and benign paroxysmal positional vertigo (BPPV) are two distinct medical conditions that predominantly affect the inner ear, leading to a major discomfort and impact on the quality of life. Despite their distinct primary clinical manifestations, a growing body of clinical evidence suggests a possible link between tinnitus and BPPV. Some researchers have provided valuable insights into the clinical observations and theoretical frameworks suggesting an association between the two conditions.

We explore the bidirectional relationship between tinnitus and benign paroxysmal positional vertigo, two distinct inner ear conditions that significantly impact the quality of life, using large population data.

Méthodes et Matériels

Using claims data from the National Health Insurance Corporation spanning 2008 to 2021, we conducted a comprehensive analysis to estimate the risk of developing benign paroxysmal positional vertigo in patients with tinnitus, and vice versa. The study involved 580,531 patients with tinnitus, 572,937 patients with benign paroxysmal positional vertigo, and their corresponding controls. We used propensity score matching and statistical analyses, including Cox proportional hazard models to assess the association between these conditions.

Résultats

During the 7.3-year observation period, 580,531 patients were diagnosed with tinnitus. The control group comprised 712,014 patients. During the 7.0-year observation period, 572,937 patients with BPPV and 723,134 controls were sampled. No significant differences in sex and age distribution, medical benefit status, disability status, hypertension, diabetes, hyperlipidemia, CVD, and stroke were observed between the groups.

Résultats

Table 1. Hazard ratio of the incidence of tinnitus in patients with BPPV and in controls, with subgroup analysis based on age and sex

		Original				PSM			
		HR	95% LCI	95% UCI	P-value	HR	95% LCI	95% UCI	P-value
Total	Tinnitus	2.037	2.01	2.065	<.0001	2.048	2.018	2.078	<.0001
	Control	1				1			
age < 40	Tinnitus	2.731	2.637	2.829	<.0001	2.727	2.621	2.838	<.0001
	Control	1				1			
40 ≤ age < 60	Tinnitus	2.157	2.114	2.2	<.0001	2.118	2.073	2.165	<.0001
	Control	1				1			
age ≥ 60	Tinnitus	1.801	1.764	1.84	<.0001	1.814	1.773	1.856	<.0001
	Control	1				1			
Male	Tinnitus	2.262	2.206	2.32	<.0001	2.291	2.229	2.354	<.0001
	Control	1				1			
Female	Tinnitus	1.953	1.922	1.985	<.0001	1.968	1.935	2.003	<.0001
	Control	1				1			

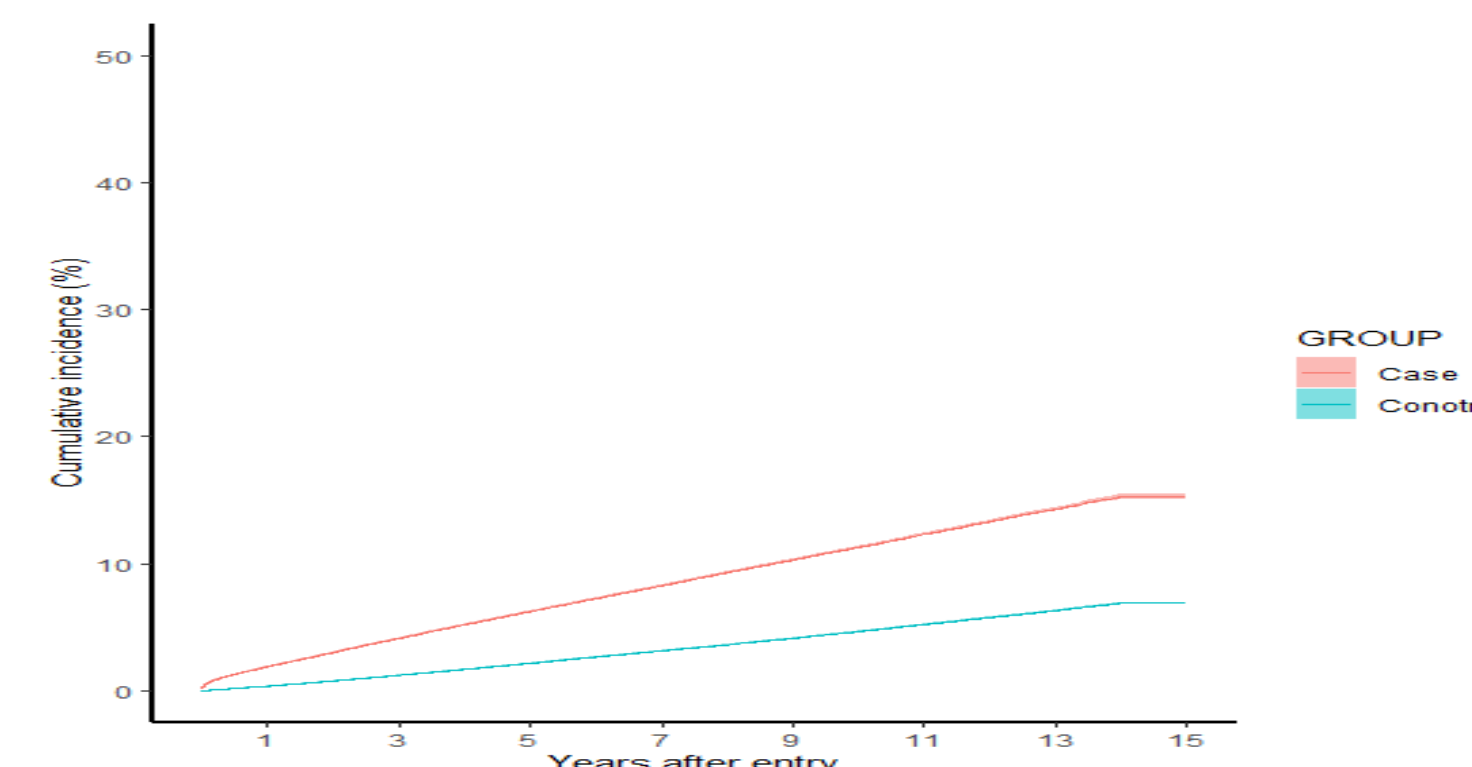


Figure 1. Cumulative incidence of BPPV in the tinnitus and control groups

Table 2. Hazard ratio of the incidence of BPPV in patients with tinnitus and in controls, with subgroup analysis based on age and sex

		Original				PSM			
		HR	95% LCI	95% UCI	P-value	HR	95% LCI	95% UCI	P-value
Total	BPPV	2.477	2.444	2.51	<.0001	2.474	2.438	2.51	<.0001
	Control	1				1			
age < 40	BPPV	3.05	2.946	3.158	<.0001	3.002	2.891	3.118	<.0001
	Control	1				1			
40 ≤ age < 60	BPPV	2.609	2.557	2.662	<.0001	2.533	2.478	2.589	<.0001
	Control	1				1			
age ≥ 60	BPPV	2.277	2.23	2.325	<.0001	2.269	2.218	2.322	<.0001
	Control	1				1			
Male	BPPV	2.801	2.732	2.872	<.0001	2.793	2.719	2.87	<.0001
	Control	1				1			
Female	BPPV	2.353	2.316	2.39	<.0001	2.37	2.33	2.412	<.0001
	Control	1				1			

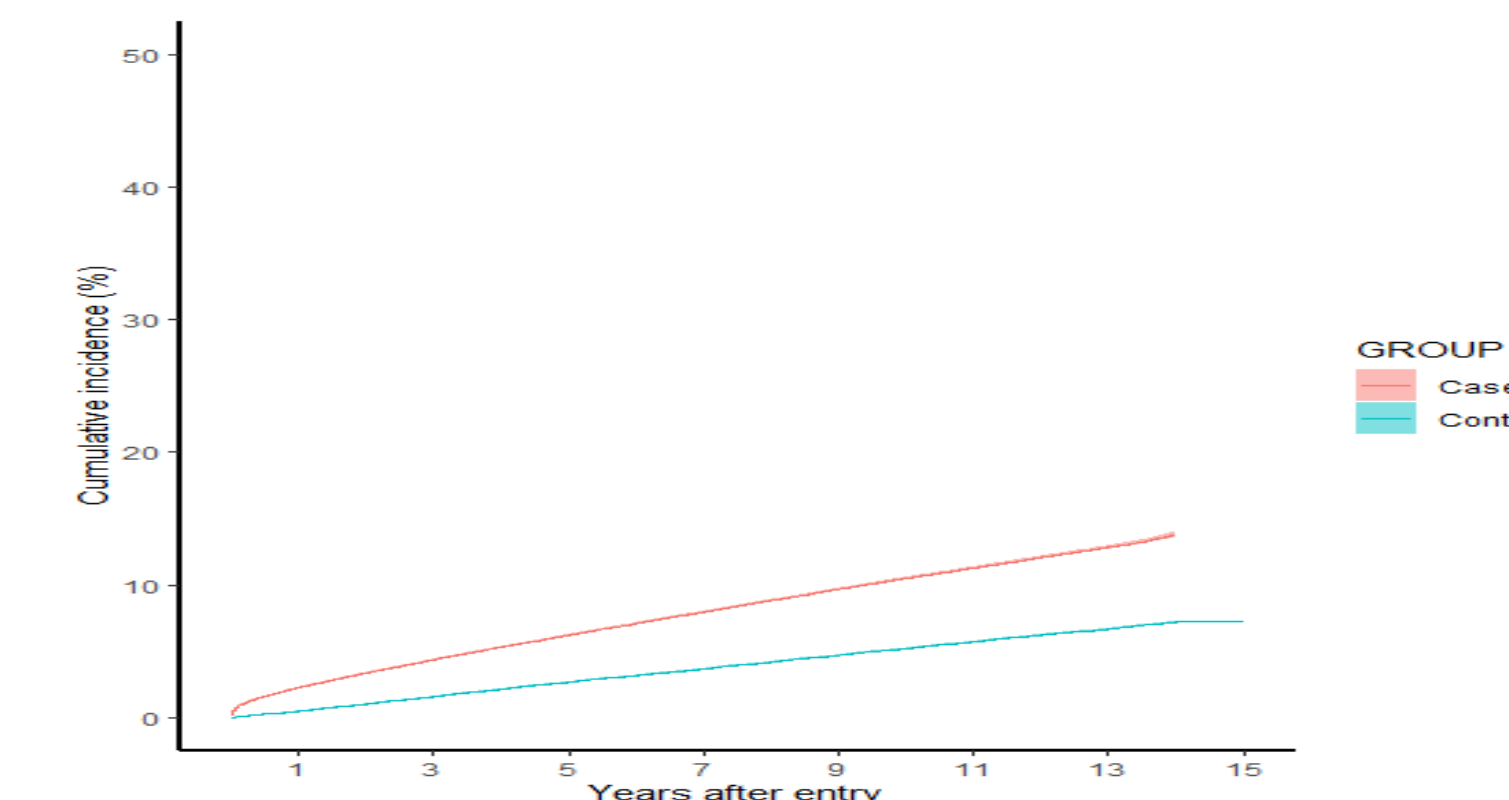


Figure 2. Cumulative incidence of tinnitus in the BPPV and control groups

Conclusion

This study provides substantial evidence for a bidirectional association between tinnitus and benign paroxysmal positional vertigo, suggesting an interconnected pathophysiology. The findings highlight the need for clinicians to assess both conditions in patients with tinnitus and benign paroxysmal positional vertigo.