Development of Charcot Arthropathy After Lumbar and Lower-Extremity Nerve Procedures: A National Cohort Study

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Introduction

Charcot arthropathy is a complication of neuropathy affecting the foot and ankle. Given the role of impaired sensation, therapeutic nerve ablations may be associated with its development. The purpose of this study was to evaluate the incidence and identify risk factors for the development of Charcot arthropathy following lumbar and lower-extremity nerve procedures.

Methods

Using a large national insurance database, we performed a retrospective cohort analysis to evaluate the diagnosis of Charcot arthropathy within 2 years following lumbar and lower-extremity nerve procedures (L4-S1) performed between 2015 and 2020. Demographics and comorbidities were assessed, and multivariable logistic regression was used to identify independent predictors of Charcot arthropathy.

Results

The cohort included 2,554,676 patients who underwent lumbar, sacral (L4-S1), or lower-extremity nerve procedures, of whom 1,279 (0.05%) developed Charcot arthropathy. Patients who developed Charcot arthropathy were older (mean 62.1 ± 10.5 vs. 58.6 ± 13.6 years; $p<0.001$) and had a higher comorbidity burden (mean 3.89 ± 3.00 vs. 1.45 ± 1.93; $p<0.001$). On multivariable logistic regression, increased odds of developing Charcot arthropathy were independently associated with diabetes (OR 4.05, 95% CI 3.48–4.71), hypertension (OR 3.05, 95% CI 2.23–4.16), and obesity (OR 2.41, 95% CI 2.11–2.75). CCI was associated with independently increased odds (OR 1.18 per point increase, 95% CI 1.16–1.20). Male gender was associated with a modestly increased risk (OR 1.2, 95% CI 1.07–1.34), while tobacco use and age demonstrated small or non-significant associations after adjustment.

Conclusion

Development of Charcot arthropathy following nerve procedures appears to be more strongly associated with underlying metabolic and comorbidity-related factors than the procedures themselves. These findings highlight the importance of risk stratification and patient counseling.