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PREVALENCE OF NEUROGENIC DETRUSOR OVERACTIVITY ASSOCIATED WITH SPINAL CORD INJURY IN TAIWAN

Hypothesis / aims of study

Neurogenic detrusor overactivity (NDO) presents a great disease burden on patients with spinal cord injury (SCI). However, epidemiological data concerning SCI patients with NDO remains limited. Therefore, this study aimed to estimate the prevalence of NDO associated with SCI in Taiwan from 2006-2008.

Study design, materials and methods

Data containing 2 million randomly sampled individuals from the National Health Insurance Research Database (NHIRD) in Taiwan were used to conduct a cross-sectional study. Patients with emergency department visits or hospitalizations for SCI defined by ICD-9 codes 806.X and 952.X between 2006 and 2008 were retrieved. We estimated three year prevalence and incidence rate respectively. Patients with certain comorbid conditions (e.g., cancer) were excluded to minimize confounding of the results (Figure1). NDO cases were defined by: (1) diagnosis defined by ICD-9 codes 596.5 and 788.3 (excluding 596.53, paralysis of bladder); (2) pharmacological treatments for neurogenic voiding dysfunction and urinary symptoms such as alpha blockers, antimuscarinic agents, and cholinergic agents; and (3) procedures such as indwelling or clean intermittent catheterization defined by NHI codes 47013C and 47014C. Patient demographics, hospital length of stay, concomitant medications, and comorbid conditions were assessed by logistic regression to assess the potential risk factors of NDO.

Results

We identified 1,557 patients with a history of emergency department visits or hospitalization due to SCI from 2006 to 2008, of which 1,296 were incident cases. The overall prevalence and incidence rate of SCI were 855 per million persons and 241 per million person-years respectively. After applying the exclusion criteria, 941 eligible patients were included for NDO evaluation (Figure1). Of those, 165 (17.5%) were NDO. The most common comorbid conditions were hypertension (17.2%), mental related disorder (15.5%) and diabetes (10.2%). Common concomitant medications included NSAIDs (71.5%), antihistamines (49.3%), and benzodiazepines (34.0%). Older patients (per year, odds ratio, 1.02 [1.01-1.03]) and those with longer hospital length of stay (per month, odds ratio, 1.09 [1.05-1.13]) were associated with greater risk of NDO.

Interpretation of results

A wide range of SCI incidence in Taiwan (14-246 per million people) was reported in the literature[1-2]. Our study results were consistent with another study using NHIRD by Wu et al.[2] The relatively higher incidence of SCI observed in these studies may be explained by the use of a population-based data source.

Consistent with previous reports, hospital length of stay, used as a proxy measurement for severity of SCI, was found to be associated with greater risk of NDO. As all SCI patients regardless of their severity were included, our study showed a relatively lower NDO prevalence (approximately one-fifth) compared with previous reports.

Concluding message

While various studies have reported the incidence and prevalence of SCI in Taiwan, this is the first study to evaluate the prevalence of NDO associated with SCI, which is shown to be low.

References

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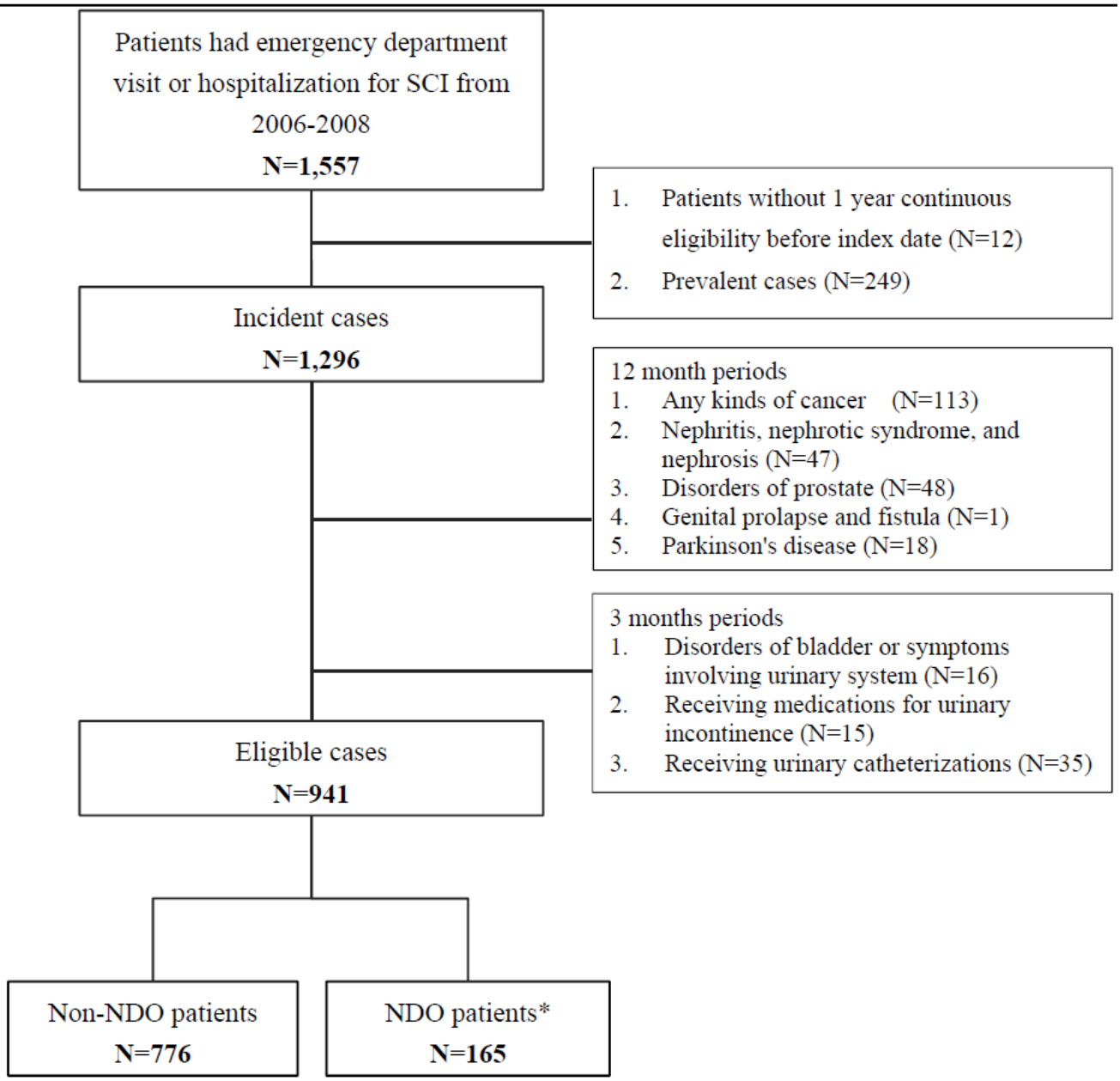
2. van den Berg ME, Castellote JM, Mahillo-Fernandez I, de Pedro-Cuesta J. Incidence of spinal cord injury worldwide: a systematic review. Neuroepidemiology. 2010;34(3):184-192; discussion 192.

Disclosures

Funding: This study was sponsored by Allergan Singapore Pte Ltd and conducted by researchers at Health Outcome Research Center, National Cheng Kung University. **Clinical Trial:** No **Subjects:** HUMAN **Ethics not Req'd:** Personal identities have been encrypted for privacy protection, but all datasets can be cross-linked with the unique and anonymous identifiers created by the National Health Research Institute for this purpose. Using the National Health Insurance Research Database for research purposes is therefore exempt from the Institutional Review Board (IRB) in Taiwan. **Helsinki:** Yes **Informed Consent:** No

Figure1. Study Design Algorithm and Patient Selection Flowchart



Abbreviations: SCI, spinal cord injury; NDO, neurogenic detrusor over-activity.