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Chronic Indwelling Urinary Catheter Increase the Risk of Bladder Cancer, Even in Patients Without Spinal Cord Injury

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Abstract: Chronic indwelling urinary catheters (CIDCs) are known as a risk factor for bladder cancer in patients with spinal cord injury (SCI). This study examined the potential risk of bladder cancer from CIDCs in patients without SCI.

The National Health Insurance Research Database in Taiwan was used to identify SCI patients (N = 1816). This group was compared against a control CIDC cohort without SCI (N = 1816) and a reference cohort with normal individuals without SCI and a record of CIDC (N = 7264). Comparisons were made based on age and gender matching over a maximum of 11 follow-up years. The incidence risk and hazard ratio (HR) of bladder cancer were estimated in all 3 groups.

During the follow-up period, the bladder cancer incidence rates were 68.90 and 102.53 per 100,000 person-years in the SCI and CIDC-non-SCI groups, respectively. These values were both higher than that of the reference cohort (12.00 per 100,000 person-years). Patients who had history of SCI (HR: 6.51; 95% CI, 2.56–16.52) or CIDC without SCI (HR: 9.11; 95% CI, 3.9–21.29) had a higher risk of bladder cancer compared with the reference cohort.

Patients with CIDCs may have an increased risk of bladder cancer development, especially in older aged and male patients compared with general population.

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Abbreviations: BPH = benign prostatic hyperplasia, CIDCs = chronic indwelling urinary catheters, HR = hazard ratio, ICD-9CM = International Classification of Diseases format, Ninth Revision, Clinical Modification, LHID2000 = longitudinal health insurance database in year 2000, NHIRD = National Health Insurance Research Database, SCI = Spinal cord injury.

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INTRODUCTION

Bladder cancer is the 7th most common malignancy and the 9th most common cancer site that results in death in males worldwide.[1] Bladder cancer is often found in males, especially in older men. The known risk factors of bladder cancer are smoking, toxic chemical exposure, and prolonged cyclophosphamide therapy.[2,3] Spinal cord injury (SCI) is also a reported risk factor for bladder cancer, especially the squamous cell type.[4] Although patients with SCI are known as a high-risk group for bladder cancer, no controlled prospective study has ever been published due to its low incidence rate. Several studies have indicated that the relative risk of bladder cancer in SCI patients is higher than in the general population, but most of these studies were descriptive or cross-sectional studies.[5–7] Additionally, a few cohort studies have presented conflicting results.[6,8–10] Groah et al[8] showed that their SCI population had a 25.4-fold increase risk of bladder cancer compared with an age- and gender-adjusted normal population. However, some studies indicated that the bladder cancer incidence was not significantly different between SCI patients and the general population.[9,10] Chronic indwelling catheter (CIDC) use is an important risk factor of bladder cancer development in SCI patients.[6,8,11–13] However, no study has reported the bladder cancer incidence from CIDC in patients without SCIs. In this study, we wanted to evaluate if CIDC itself is an independent risk factor of bladder cancer by comparing the bladder cancer incidence in patients with CIDCs but without SCI (CIDC non-SCI) and the general population without CIDCs. Furthermore, we also compared the bladder cancer incidence between CIDC patients without SCI and SCI patients to determine if SCI patients have an even higher bladder cancer risk under an immune depression status.

MATERIALS AND METHODS

The National Health Insurance Administration of the Ministry of Health and Welfare in Taiwan provided the National Health Insurance Research Database (NHIRD). The dataset included all claims data from Taiwan's National Health Insurance program since 1997. Additionally, approximately 99% of the population in Taiwan has enrolled in the National Health Insurance program. All of the patients receiving a diagnosis in Taiwan were recorded in this database. The diseases recorded in this database were consistent with the International Classification of Diseases format, Ninth Revision, Clinical Modification (ICD-9CM) code. The drug prescriptions and the operation recodes were based on the medical expenditure