321

Lee M H[1], Chen W C[1], Wu S L[2], Lin H H[3], Wu H C[1]
1. *Feng-Yuan Hospital,* ***2.*** *Griffith University, Australia,* ***3.*** *Central Taiwan university of Science and Technology*

INTERSTITIAL CYSTITIS / BLADDER PAIN SYNDROME (IC/BPS) IS NOT RELATED TO BLADDER CANCER: A NATIONWIDE POPULATION-BASED, PROPENSITY SCORE–MATCHED COHORT STUDY

Hypothesis / aims of study

Interstitial Cystitis/Bladder Pain Syndrome (IC/BPS) is a highly prevalent debilitating chronic condition characterized by bladder pain and urinary symptoms such as frequency, urgency, and nocturia. Previous study reported that patients with IC/BPS during the 3-year follow-up period showed increased risk of bladder cancer than healthy controls. However, a potential detection bias may exist when elevated risk for bladder cancer within three years immediately following an IC/BPS diagnosis.

There should be noted that it is also common for IC/BPS to coexist with either unexplained medical conditions, such as fibromyalgia, irritable bowel syndrome, and chronic fatigue syndrome or confusable diseases during diagnosis of IC/BPS, such as urolithiasis and urinary tract infection. So it is likely that patients who present with comorbid disease would be evaluated with more physician visits and may be more likely to have an incidental bladder cancer detected, such as during routine urinalysis. Therefore, we re-examined the risk of bladder cancer in a large population based cohort of individuals with a new diagnosis of IC/BPS to assess a potential detection bias because of poor controlled confounding factor (comorbid disease) or inadequate matched non-IC/BPS cohort group.

Study design, materials and methods

We performed a retrospective cohort study of Longitudinal Health Insurance Database 2000 with newly diagnosis of IC/BPS from 2002 through 2010. The Longitudinal Health Insurance Database 2000, a representative subset of the National Health Research Institute Database, comprises the complete original claims data of 1,000,000 individuals randomly sampled from the Registry of the National Health Research Institute Database. After limiting our sample to patients with IC/BPS diagnosis (ICD-9 code 595.1 at least once during the study period), we identified an IC/BPS cohort. We then excluded patients with diagnosis of bladder cancer (ICD-9 codes, 180-189) before IC/BPS diagnosis. This process yielded an IC/BPS cohort comprising 1684 patients without bladder cancer before. Subjects free from diagnosis of IC/BPS were extracted with a total 927,726 patients without bladder cancer before as non-IC/BPS cohort.

The primary outcome was the event of bladder cancer, determined by the record with ICD-9 codes, 180-189 after the entry dates. Next, we measured pre & post existing comorbidity including fibromyalgia, irritable bowel syndrome, migraine, depression, chronic fatigue syndrome, anxiety, and endometriosis during the study period for propensity score-matching. Other confusable diseases during diagnosis of IC/BPS, such as urinary tract infection, urolithiasis, smoking status, and diabetes were also measured. We adopted the propensity score–matching method to minimize the detection bias and selection bias from confounding factor. We defined the logit of predicted probability of bladder cancer as a propensity score using the following baseline characteristics: sex, age, date of diagnosis, comorbidity, and smoking status. Subjects with IC/BPS were matched on a one-to one basis with subjects with non-IC/BPS. We used chi-square tests to evaluate associations between events of bladder cancer and patient-level covariates (age, sex, comorbidity, smoking status). Next, we compared primary outcome (events of bladder cancer) between IC/BPS and non-IC/BPS cohort using multiple logistic regression. Analyses were performed using SPSS version 22.

Results

After adjusted with propensity score-matching, we identified 1642 patients with diagnosis of IC/BPS and 1642 patients with non-IC/BPS cohort. There is no statistically significant association between comorbidity and bladder cancer except urolithiasis ($P<0.001$) and urinary tract infection ($P=0.03$). During the study period, 20 (1.2%) IC/BPS patients and 30 (1.8%) non-IC/BPS patients were diagnosed as having bladder cancer. Chi-square test showed no difference of bladder cancer incidence between IC/BPS and non-IC/BPS cohort ($p=0.2$) (Table1). Moreover, the multiple logistic regressions estimating the risk of bladder cancer showed no significant association among IC/BPS, sex, urolithiasis, and urinary tract infection except age ($B=0.02$, $p=0.005$) (Table2).

Interpretation of results

During the study period, the result suggested that IC/BPS is not related to bladder cancer. Increased age showed increased risk of bladder cancer. Moreover, within the first year after IC/BPS diagnosis, bladder cancer incidence in the IC/BPS cohort was 12/20 (60%). The process during diagnosis of IC/BPS maybe exist a delayed diagnosis of bladder cancer.

Concluding message

IC/BPS is not related to bladder cancer. The detection bias from previous study may be the results of either an inadequate matching non-IC/BPS cohort or poor controlled confounding factor.

<Table 1> Chi-square tests between IC/BPS & non-IC/BPS cohort

			Bladder Cancer		Total
			No	Yes	
IC/BPS	No	Count (Percentage)	1612 (98.2%)	30 (1.8%)	1642 (100%)
	Yes	Count (Percentage)	1622 (98.8%)	20 (1.2%)	1642 (100%)
Total		Count (Percentage)	3234 (98.5%)	50 (1.5%)	3284 (100%)

P=0.2

<Table 2> Multiple logistic regression of factors influencing incidence of bladder cancer

	B value	P value
IC/BPS	-0.23	0.447
Age*	0.02	0.005*
Sex	0.59	0.056
Urolithiasis	14.44	0.999
Urinary tract infection	0.69	0.999

Disclosures
Funding: None **Clinical Trial:** No **Subjects:** HUMAN **Ethics Committee:** Ethics Committee of Feng-Yuan Hospital **Helsinki:** Yes **Informed Consent:** Yes