

## URINARY INCONTINENCE IS AN INDEPENDENT RISK FACTOR FOR UPPER URINARY TRACT STONE: A NATION-WIDE POPULATION-BASED AND WITH AN 8-YEAR FOLLOW-UP STUDY

### Hypothesis / aims of study

Cumulative evidences indicate a tight association between urinary stone and metabolic syndrome. Metabolic syndrome has also been found to be closely linked to urinary incontinence. It is interesting and also important to know whether there is a relevant association between urinary incontinence and urinary stone.

### Study design, materials and methods

We used data sourced from Longitudinal Health Insurance Database, which consists of one million randomly selected subjects from the National Health Insurance Research Database of Taiwan. Health Insurance System of Taiwan covers approximately 23 million people (98% of population). From 1997 to 2001, a total of 1943 subjects were diagnosed with urinary incontinence. All subjects did not have previous diagnosis of urinary stone and spinal cord injury. Of them, 383 were males and 1560 were females. A cohort of 9715 (5 for each subject with urinary incontinence) age and gender-matched subjects without the diagnosis of urinary incontinence, urinary stone and spinal cord injury were enrolled as the control group. All subjects were followed up to the end of 2009 with a minimal follow-up of 8 years. A stratified Cox proportional hazards regression model was used to calculate the risk of upper urinary tract stone between study and control groups.

### Results

After at least 8-year follow-up, 407 (20.9%) of the 1943 study subjects and 1088 (11.2%) of the 9715 control subjects developed upper urinary tract stones. Urinary incontinence was associated with a significantly increased risk of urinary stone (hazard ratio 1.99, 95% confidence interval, 1.78 – 2.23,  $p < 0.001$ ). After adjusting for age, gender, hypertension and diabetes, the stratified Cox proportional hazards regression analysis still showed that patients with urinary incontinence were more likely to develop upper urinary tract stones than the patients without urinary incontinence. The adjusted hazard ratio is 2.21 (95% confidence interval, 1.97 – 2.48,  $p < 0.001$ ).

### Interpretation of results

Age, gender, hypertension and diabetes have been shown to be associated with urinary stone. After adjusting for these factors, the regression analysis still demonstrates a higher risk of developing upper urinary tract stone in subjects with urinary incontinence.

### Concluding message

The findings of this study indicate that urinary incontinence is an independent risk factor for upper urinary tract stone. For health care professionals taking care of subjects with urinary incontinence, it is important to survey subjects' urinary tract for detecting urinary stone.

### Disclosures

**Funding:** None **Clinical Trial:** No **Subjects:** HUMAN **Ethics Committee:** Institutional Review Board, Taipei Veterans General Hospital **Helsinki:** Yes **Informed Consent:** No