

Excess risk of bladder cancer in spinal cord injury: evidence for an association between indwelling catheter use and bladder cancer

**Objectives:** To evaluate whether the risk of bladder cancer is greater in individuals with spinal cord injury (SCI) than in the general population and whether indwelling catheter (IDC) use is a significant independent risk factor for bladder cancer.

**Design:** Historical cohort study in which subjects with SCI were stratified according to bladder management method and followed for the development of bladder cancer.

**Setting:** A large rehabilitation hospital in the Spinal Cord Injury Model Systems.

**Participants:** A total of 3670 patients with SCI who were evaluated for bladder cancer on at least 1 occasion by cystoscopy over a period of 1 to 47 years.

**Interventions:** Not applicable.

**Main Outcome Measures:** Bladder cancer occurring after SCI determined by diagnosis at our facility, by subject report, or by report of next of kin.

**Results:** Twenty-one cases of bladder cancer were found in the 3670 study participants. The risk of bladder cancer for subjects with SCI using IDC is 77 per 100,000 person-years, corresponding to an age- and gender-adjusted standardized morbidity ratio (SMR) of 25.4 (95% confidence interval [CI], 14.0 – 41.9) when compared with the general population. After controlling for age at injury, gender, level and completeness of SCI, history of bladder calculi, and smoking, those using solely IDC had a significantly greater risk of bladder cancer (relative risk [RR] = 4.9; 95% CI, 1.3 – 13.8) than those using non-indwelling methods. Mortality caused by bladder cancer in individuals with SCI was significantly greater than that of the US population (SMR = 70.6; 95% CI, 36.9 – 123.3).

**Conclusions:** Bladder cancer risk and mortality are heightened in SCI compared with the general population. IDC is a significant independent risk factor for the increased risk of and mortality caused by bladder cancer in the SCI population.

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