

## Factors Associated With Renal and Urological Complications in Patients Suffering From Spinal Cord Injuries During Subsequent Years of Post-Injury

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**Received:** December 23, 2013; **Accepted:** December 28, 2013

**Keywords:** Spinal Cord Injuries; Urinary Tract

### Dear Editor,

Virtually all patients with a spinal cord injury (SCI) suffer from neurogenic lower urinary tract dysfunction (NLUTD). The major goal of any treatment of these patients is the preservation of renal function. Especially suprasacral SCI frequently leads to elevated bladder storage pressures which are the major risk factor for renal deterioration. Therefore, the primary objective of bladder management is to achieve low pressure urine storage and emptying. To classify NLUTD of an individual patient and to monitor treatment, regular controls of bladder function are mandatory.

The authors assessed the patients with SCI by questionnaires, laboratory tests and imaging. The number of patients included (5901) is impressive. The number of urologic complications observed is rather high. It was not surprising that presence of urologic complications was associated with level of injury and time since injury. It is noteworthy, however, that these complications are depending on the living place (1).

Unfortunately, but understandably, no urodynamic data were included in the analysis. It is very demanding to collect urodynamic data from such a large patient cohort. Furthermore, urodynamic examinations are merely possible in specialized centers, and I suspect that this examination was not available for all patients at every control visit. Urodynamics, however, are considered the gold standard for the assessment of the main risk factors for renal damage, namely a detrusor leak point pressure/storage pressure > 40 cm H<sub>2</sub>O and/or a low detrusor compliance (< 20 mL/cm H<sub>2</sub>O). Until today, these factors can exclusively be assessed by urodynamics. Thus, it is crucial for the evaluation of NLUTD, since significant changes in NLUTD may occur without symptoms in about 70% of patients with SCI (2). The lack of urodynamic examinations may at least be one explanation for the higher risk for renal complications in SCI patients living in rural areas.

As a consequence, the more frequent use of urodynamic testing in this group of patients may in the future even improve the outcome of patients with SCI. As urodynamics are expensive, time consuming, and carry the risk of urinary tract infections, a new diagnostic parameter would be clinically helpful if it either could replace urodynamics or could be used as an additional diagnostic tool to detect SCI patients with NLUTD without risks for consecutive renal damage. Sonographic measurement of the bladder wall thickness may be a future option, but until today, this technique is not well standardized and cannot replace urodynamics yet (3).

Not unexpectedly, urinary tract infections are the most common urologic complication in these patients. The frequency of urinary tract infections depends on the method used for bladder evacuation, with indwelling catheters having the highest infection rates. The study does not distinguish between the different methods of bladder management. In general, indwelling catheters should be avoided if ever possible to reduce the number of urinary tract infections (4).

In summary, the authors are congratulated for their extensive study, providing the readers with important information about the impact of demographic and environmental factors on urologic complications in SCI patients. As these factors also include the coverage of medical supplies, which is world-wide dependent on living place and social status, the results also mirror the need of optimized diagnostics and treatment of SCI patients as demanded by the world health organization (5). As meticulous urodynamic diagnostics and adequate urologic treatment have been proven to dramatically decrease the rate of urologic complications after SCI (6), the nationwide access to urologic care for patients with SCI should be targeted in the future.

### Financial Disclosure

I have no conflict of interest.

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