



Reduced Bladder and Bowel Control after Severe Spinal Cord Injury-- Even in Patients Able to Walk

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Reduced Bladder and Bowel Control after Severe Spinal
Cord Injury--Even in Patients Able to Walk
Slide 1

Background Context

- Although walking and unlimited mobility are main goals for spinal-cord-injured (SCI) patients, more limited accomplishments--such as bladder and bowel control--would significantly improve quality of life for those lacking them.
- Recent conferences and publications have cited such endpoints as under-studied.
- To investigate the natural history of bladder and bowel control after severe SCI, we did epidemiology using the large, well-monitored database from the multi-center GM-1 trial.

Methods

Patient Sample

- 760 patients at 28 centers in North America.
- Injuries were rostral to T10 and left at least 1 leg with an American Spinal Injury Association (ASIA) motor score <15 of 25.

Methods

Measurements

- Baseline Assessment
 - Using the ASIA Impairment Scale (AIS):
 - Grade A
 - Grade B
 - Grades C and D
 - and by injury level:
 - cervical
 - thoracic
- Outcome Measure
 - At weeks 4, 8, 16, 26, and 52 after injury, approximately 600 patients were assessed for bladder and bowel control.
 - Control was scored as: 0=absent, 1=abnormal, 2=normal.

Methods

Definition: ASIA Impairment Scale (AIS)

Grade	Description
A	No motor or sensory function is preserved in the sacral segments S4-S5
B	Sensory but no motor function is preserved below the neurological level and extends through the sacral segments S4-S5
C	Motor function is preserved below the neurological level, and the majority of key muscles below the level have a muscle grade less than 3.
D	Motor function is preserved below the neurological level, and the majority of key muscles below the level have a muscle grade greater than or equal to 3.
E	Motor and sensory function are normal.

Methods Analyses

Statistical methods were

- Fisher's Exact Test for binary outcomes
- Chi-squared, the Wilcoxon 2-Sample Test and the Median Test for nonparametric measures

Results Sample

	AIS A	AIS B	AIS CD	Total
Cervical	332	113	134	579
Thoracic	150	18	13	181
Total	482	131	147	760

$p < .0001$

Results

Association with Baseline Severity

- Bladder and bowel control were very strongly ($p < .0001$) associated with AIS severity at all time points.
- Proportionally more patients with cervical injuries than with thoracic had absent bladder control at Weeks 4, 8, 16, 26, and 52; and absent bowel control at Weeks 4, 8, 16, and 52.

Results

- Significantly fewer females had absent bladder or bowel control at Weeks 8 and 16.
- Patients with fracture dislocations had worse ($p < .01$) bowel and bladder control than did patients with stable injuries.
- Those with suspected central cord injuries did better ($p < .0001$) at all follow-ups.
- Patients directly admitted to tertiary care more often ($p < .01$) remained with absent bladder or bowel control, starting Week 8.
- Age was not a notable factor; nor was MPSS starting before or after 3 hours; nor was assignment to GM-1 or placebo.

Results

Compared to Ability to Walk

- The association between ability to walk at Week 26 and having bladder or bowel control at Week 8 or 26 was strong ($p < .0001$) -- *but it was far from perfect in one of the two directions.*
 - Of 443 patients unable to walk at least 25 feet assisted, only 9 (or 7.6%) had normal bowel control.
 - *However,* of 153 who could walk at least that well, there were 44 (or 28.8%) who were left with abnormal or absent bowel control.
 - The results are similar for bladder control.

Conclusions, I

- Though bowel and bladder control share some similar patterns with more commonly cited outcome measures, there are important differences.
 - At Week 26, achievement of some walking nonetheless left over one quarter of the patients without normal bladder control or normal bowel control.
 - More, 79.9% of all patients (whether walking or not) remained with less than normal bladder control, and 80.0% percent with less than normal bowel control.

Conclusions, II

Thus, bowel and bladder impairment, representing a serious impact on quality of life, affect a very large portion of the SCI population and are a significant problem, separate from ambulation and needing specifically directed work.