A systematic review of the management of autonomic dysreflexia after spinal cord injury


CRD summary
This review concluded that a variety of options was available to prevent autonomic dysreflexia and manage the acute episode after spinal cord injury. However, these are mainly supported by non-controlled trials. The vast majority of data were poor quality and error and bias were possible in the review process, but the authors' cautious conclusions appear appropriate.

Authors' objectives
To evaluate strategies to prevent and manage autonomic dysreflexia after spinal cord injury.

Searching
MEDLINE, CINAHL, EMBASE and PsycINFO were searched for studies published in English (dates spanned 1950 to 2007). Search terms were reported. Retrieved articles were searched for relevant studies.

Study selection
Randomised controlled trials (RCTs), prospective cohort studies and cross-sectional studies that assessed pharmacologic and non-pharmacologic interventions for management of autonomic dysreflexia in participants with spinal cord injury were eligible for inclusion. For inclusion, autonomic dysreflexia outcomes (such as blood pressure) or symptoms (such as headaches, sweating) had to be assessed.

Strategies to prevent autonomic dysreflexia varied in the included studies and included botulinum toxin, capsaicin and anticholinergics. Pharmacological agents for management of autonomic dysreflexia in the included studies were nifedipine, captopril, terazosin, prazosin, phenoxybenzamine, prostaglandin E2, sildenafil and nitrates. The included populations and outcomes varied.

The authors did not state how many reviewers performed the study selection.

Assessment of study quality
Methodological quality of RCTs was assessed using the PEDro scale (score out of 10). Non-RCTs were assessed using a modified version of the previously published D&B tool to give a score out of 28. Studies were then categorised into levels of evidence using criteria described by Sackett et al. Level 1 was highest (corresponding to good-quality RCTs) and level 5 lowest (corresponding to observational reports, single-subject case reports or clinical consensus).

Quality was assessed independently by two reviewers.

Data extraction
The authors stated neither how data were extracted nor how many reviewers performed data extraction.

Methods of synthesis
The studies were combined in a narrative synthesis. Individual study details were presented in tables.

Results of the review
Thirty-one studies were included in the review (n=1,105), including six RCTs (n=128). RCTs had PEDro scores that ranged from 5 to 10 (good to excellent). Most of the non-RCTs had D&B scores lower than 15 points.

Strategies to reduce/prevent episodes of autonomic dysreflexia (botulinum toxin injections, capsaicin, urinary bladder surgical augmentation, epidural anaesthesia, intraoperative anaesthesia by general or spinal anaesthesia) were supported by level 4 (pre-post studies) and level 5 (observational studies) evidence.
Initial acute management of an episode of autonomic dysreflexia by non-pharmacologic means (positioning the patient upright, loosening tight clothing, eliminating any participating stimulus) was supported by level 5 clinical consensus and physiologic data.

There was no evidence to support use of anticholinergics or topical anaesthetic in prevention of autonomic dysreflexia. Evidence for use of sacral deafferentation and lidocaine was conflicting.

Pharmacologic management of autonomic dysreflexia with anti-hypertensive drugs in the presence of sustained elevated blood pressure was supported by level 1 evidence for prazosin and level 2 evidence for nifedipine and prostaglandin E2. Level 4 and 5 evidence supported use of nitrates, captopril, terazosin and there was conflicting evidence for phenoxybenzamine. There was no evidence to support use of sildenafil.

**Authors' conclusions**
A variety of options was available to prevent autonomic dysreflexia and manage the acute episode, but these were mostly supported by non-controlled trials; more rigorous trials were required.

**CRD commentary**
The review question was supported by broad inclusion criteria for participants, interventions, outcomes and study designs. Relevant databases were searched. Only published-English language articles were sought, which increased the possibility of language and publication biases. Assessment of study quality was performed in duplicate, which minimised risk of error and bias; no similar steps were reported for study selection and data extraction. Study quality was assessed using appropriate criteria and higher quality evidence was highlighted in the analysis. Narrative synthesis appeared appropriate given the differences between studies. The vast majority of data were poor quality and error and bias were possible in the review process, but the authors' cautious conclusions appear appropriate.

**Implications of the review for practice and research**
**Practice:** The authors stated that people with spinal cord injury and their families needed to be empowered and educated to enable them to direct their own treatment. All spinal cord injury patients should carry an emergency medical card for autonomic dysreflexia. When nonpharmacologic measures failed and systolic blood pressure remained elevated, pharmacologic agents should be initiated. In some instances, patients should be supplied with short-acting anti-hypertensives to take before seeking medical attention. However, if their symptoms continued/blood pressure did not stabilise, they needed to attend the nearest emergency department.

**Research:** The authors stated that RCTs were needed to determine whether nifedipine, nitrates and captopril or a combination of therapies was most effective.

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Record Status
This is a critical abstract of a systematic review that meets the criteria for inclusion on DARE. Each critical abstract contains a brief summary of the review methods, results and conclusions followed by a detailed critical assessment on the reliability of the review and the conclusions drawn.