

Autonomic Dysreflexia

Autonomic Dysreflexia is a life threatening condition that can cause death.

The most common causes of Autonomic Dysreflexia are bladder and bowel distension.

Signs and Symptoms: Raised BP, bradycardia, pounding headache, flushing, sweating or blotching above level of injury; pale, cold, goosebumps below level of injury.

If a patient has an episode of Autonomic Dysreflexia:

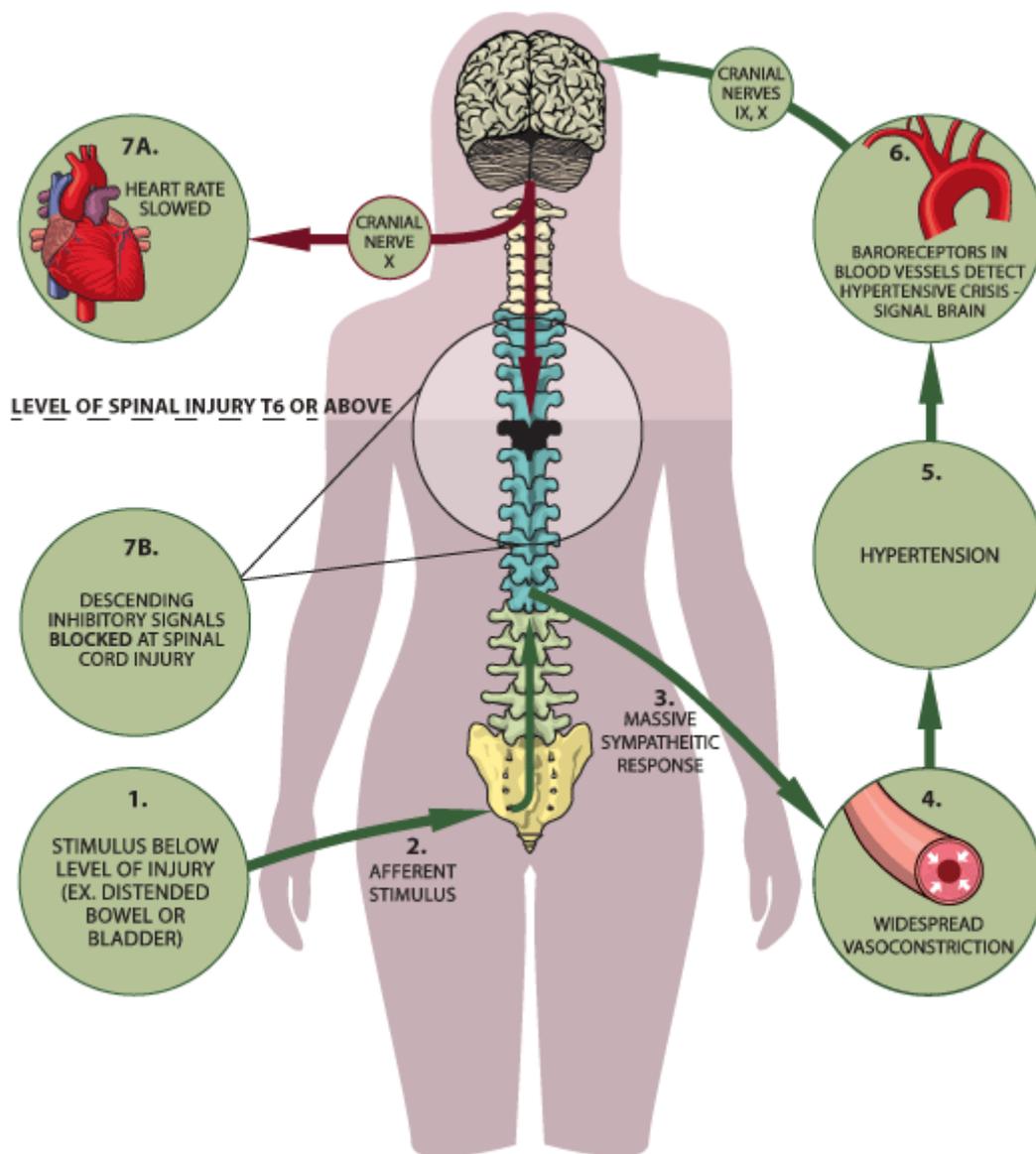
1. Sit patient up (keep patient sitting or upright until BP returns to normal)
2. Loosen or remove any tight clothing
3. Monitor BP every 2-5 minutes
4. Check bowel (constipation, haemorrhoids) and bladder (catheter kinks/obstructions etc., bladder distension)
5. Insert indwelling catheter if not already in place/ rectal examination
 - If systolic BP > 150mmHg instigate immediate pharmacological management:
 - 10 mg Nifedipine sublingual or chewed or GTN spray 1-2 sprays, repeat every 20-30 min if needed
 - An individual with a spinal cord injury above T6 typically has a normal systolic Blood Pressure (BP) in the 90-110mmHg range. Therefore, a BP of 20-40mmHg above baseline may be a sign of Autonomic Dysreflexia (NB: Autonomic Dysreflexia has occurred in patients with lesions at T8 and above).
 - Remind patients and their carers about prevention and management of Autonomic Dysreflexia and encourage patient to carry Nifedipine/GTN.

Definition

Autonomic Dysreflexia

A clinical emergency in individuals with spinal cord injury (scireproject.com). Autonomic Dysreflexia is an uninhibited sympathetic nervous system response to a variety of noxious stimuli occurring in people with spinal cord injury at the thoracic six (T6) level and above. (Consortium for Spinal Cord Medicine Clinical Practice Guidelines). (NB: Autonomic Dysreflexia has occurred in patients with lesions at T8 and above).

Pathophysiology



Reproduced from Ontario Neurotrauma Foundation. Autosomal Dysreflexia. Caring for Persons with Spinal Cord Injury - e-learning resource for family physicians.

A stimulus, such as a distended bowel or bladder that occurs below the level of spinal cord injury (1) sends an afferent signal to the spinal cord (2). The impulses from the noxious stimulus are unable to ascend past the spinal cord lesion and may activate a massive sympathetic reflex (3) causing widespread vasoconstriction of the blood vessels below the level of the injury (4) resulting in hypertension and other signs of sympathetic stimulation (5).

Two vasomotor brainstem reflexes (6) occur to lower BP:

- Increased parasympathetic stimulation to the heart resulting in bradycardia or "relative" slowing of heart rate (this alone cannot compensate for severe vasoconstriction) (7a)
- Increased sympathetic inhibitory outflow from vasomotor centres above the spinal cord injury, which results in profuse sweating and vasodilatation of the skin above level of injury as the impulses cannot pass below the injured level and cannot dilate the splanchnic bed to accommodate the extra circulating

blood due to increased peripheral resistance (7b)

As the spinal cord injury separates the parasympathetic (craniosacral division of ANS) from the sympathetic branch (thoracolumbar chain) the negative feedback loop is affected. The body is unable to restore autonomic equilibrium when presented with noxious stimulus below the level of injury so BP will keep rising until the stimulus is removed.

Signs and symptoms – Clinical Features

- Hypertension: Greater than 20mmHg above baseline for both systolic and diastolic (Typical BP in tetraplegia patient is 90-110/60-70mmHg supine)
- BP is commonly lower when patient is sitting due to orthostatic hypotension)
- Severe bilateral pounding headache
- Diaphoresis or flushing above the level of the spinal cord lesion (Diaphoresis can be profuse)
- Nasal congestion
- Visual changes or disturbances
- Bradycardia or tachycardia (Bradycardia at onset, tachycardia may follow)
- Pallor or gooseflesh below the level of the spinal cord lesion
- Respiratory distress or bronchospasms
- Anxiety (Apprehension over impending physical problem to fear of death is common)
- Metallic taste in mouth
- Significantly elevated BP with minimal or no symptoms (Silent Autonomic Dysreflexia)

Causes

Autonomic Dysreflexia has many potential causes. It is essential that the specific cause be identified and treated in order to resolve an episode of Autonomic Dysreflexia and to prevent recurrence. Any noxious stimuli below the level of injury may result in Autonomic Dysreflexia. Bladder and bowel problems are the most common causes of Autonomic Dysreflexia.

System	Noxious Stimuli
Dermatologic	Pressure sore Ingrown toenail Constrictive clothing Burns, blisters, sunburn, frostbite
Musculoskeletal	Fracture Heterotopic ossification Dislocation
Reproductive	Female: menstruation, vaginitis, labour and delivery Male: ejaculation, epididymitis, scrotal compression, testicular torsion
Haematological	Deep vein thrombosis Pulmonary embolus
Central Nervous System	Syringomyelia

System	Noxious Stimuli
Medications	Nasal decongestants Misoprostol Sympathomimetics Stimulants

Management and recommendations

Sit patient up (keep patient sitting or upright until BP returns to normal)

Loosen or remove any tight clothing

Monitor BP every 2-5 minutes

For patients with catheter:

- empty leg bag and note volume
- check tubing not blocked/kinked
- if catheter blocked remove and re-catheterise using lubricant containing lidocaine

For patients without catheter:

- if bladder distended and patient unable to pass urine insert catheter using lubricant containing lidocaine

If bladder distension excluded – gently examine per rectum

For faecal mass in rectum:

- gently insert gloved finger covered in lidocaine jelly into rectum and remove faecal mass

If bladder and bowel excluded check the above (see table of causes)

If systolic BP > 150mmHg instigate immediate pharmacological management:

- 10 mg Nifedipine sublingual or chewed or GTN spray 1-2 sprays, repeat every 20-30 min if needed

If symptoms do not resolve quickly patient should be admitted to hospital for further assessment and management or contact a spinal cord injury centre for further advice.

Follow-up

- Blood pressure should be monitored by patient/carer for at least 2 hours after an episode to ensure no rebound hypotension and no Autonomic Dysreflexia recurrence
- Provide patient with information to prevent further episodes
- Encourage patient to maintain a record of their BP using a home BP cuff and know their baseline BP
- Provide patient with medication (e.g. Nifedipine 10mg sublingual or GTN spray) to treat episodes
- If patient has recurrent episodes of Autonomic Dysreflexia, monitor closely and consider referring to a specialist in spinal cord injury

References

Ontario Neurotrauma Foundation. Caring for Persons with Spinal Cord Injury - e-learning resource for family physicians. eprimarycare.onf.org/AutonomicDysreflexia.html

Royal College of Physicians (2008). Chronic Spinal Cord Injury. Management of Patients in Acute Hospital Settings. www.rcplondon.ac.uk.

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