Autonomic Dysreflexia – A Medical Emergency

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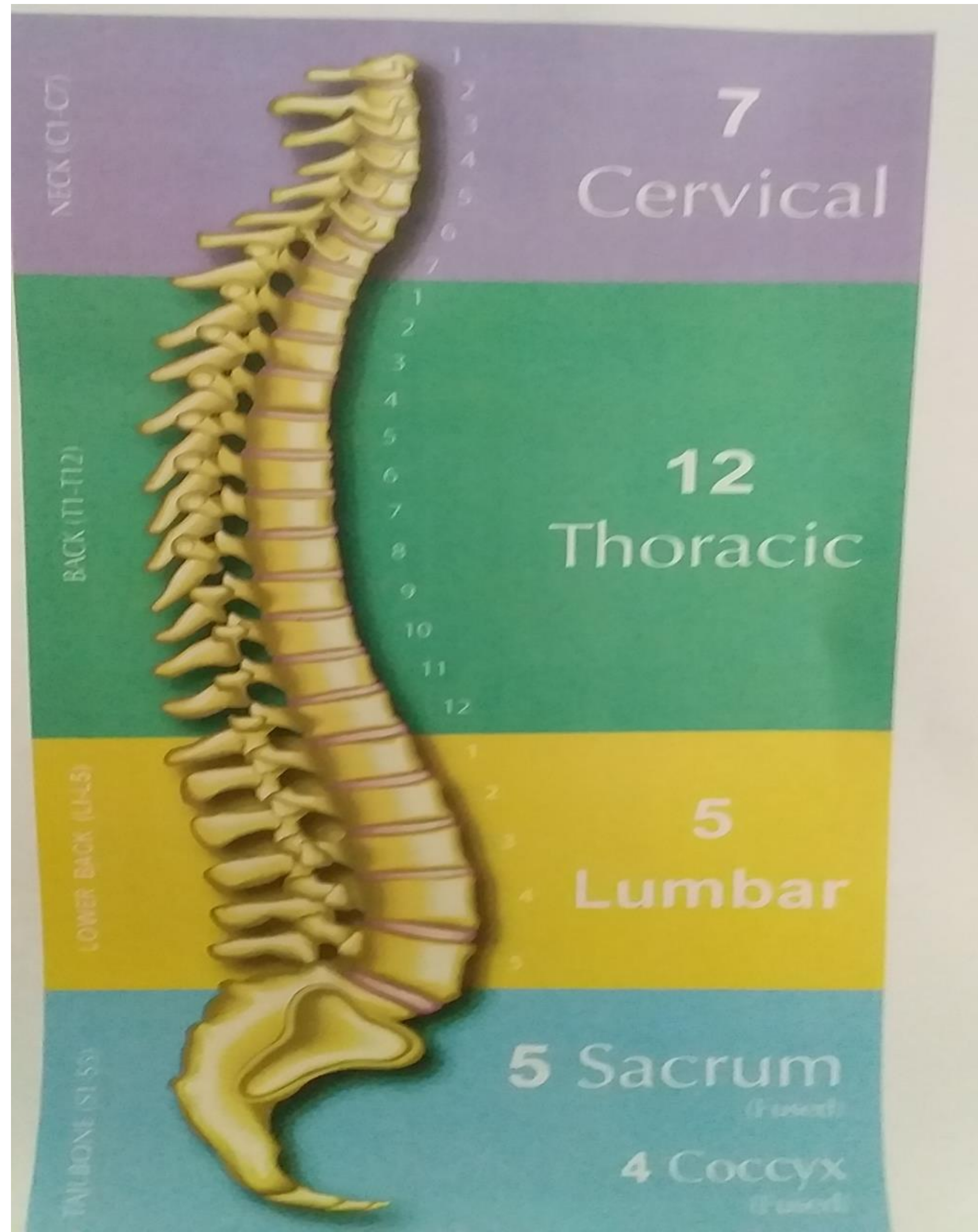
Autonomic Dysreflexia(AD) is an abnormal, overreaction of the involuntary (autonomic) nervous system that controls the things you don’t have to think about e.g. breathing, to pain, or to discomfort below the level of injury. It is a potentially life threatening medical condition for people with a spinal cord injury (SCI) of T6 and above. Characterised by an increase in blood pressure which is 20mmHg or more over the persons NORMAL blood pressure. People with a T6 and above injury tend to have a lower normal blood pressure – 90/60; 100/60, therefore it is very important to know the baseline blood pressure.

Why is it a medical emergency? Because extreme elevated blood pressure left untreated can lead to stroke, seizures, or even death.

Signs and Symptoms

- Pounding headache; sweating and/or goosebumps; pale skin; blotchy red skin above level of injury; stuffy or blocked nose; blurred vision; bradycardia; patient states to be feeling unwell, but nothing specific.
- A person may present with all or only some of these signs and symptoms. Most people, if they have experienced AD previously, will recognise when they are experiencing AD – it is important to listen to the person!

Spine



Common causes

- The most common cause is bladder related. It could be as simple as a kinked catheter, obstructing the emptying of the bladder into the catheter bag; or it could be a blocked catheter; or a urinary tract infection (UTI); or if urinary catheter bag is overfull (meaning bladder becomes distended due to nowhere for the urine to go); bladder stones; or bladder procedures.
- Bowel – full bowel; constipation; haemorrhoids; anal fissures; digital bowel evacuation.
- Skin related – tight clothing; shoes; pressure areas – watch out for clothing that has studs or buttons in places that can cause pressure on skin; burns (including sunburn).
- Pain – ingrown toenail; bone fractures (the person may not realise they have fractured a bone, therefore symptoms of AD may be the first indicator; post operation pain. Any painful stimuli below level of T6 SCI may cause smyptoms of AD.

Treatment

- Check blood pressure (BP). If BP is higher than patients usual (20% or more higher), then sit patient up if lying down – requires 2 people to assist. This helps to lower BP. Alert Medical staff to AD episode. Loosen any tight clothing; remove abdominal binder, compression stockings if in situ.
- Bladder: If patient has a supra pubic catheter (SPC) or indwelling urethral catheter (IDUC), check for overfull catheter bag and any kinks in catheter tubing. If minimal urine in catheter bag, check with patient/carer when the bag was last emptied. If possible, perform an ultrasound of bladder. The catheter may be blocked, requiring an emergency change of catheter (if in situ); or a catheter insertion if no catheter in situ and bladder distended.
- Bowel: Ascertain patients recent bowel regime – may require digital evacuation. May require anaesthetic gel rectally to reduce pain – waiting 5-10 minutes before evacuation begins.

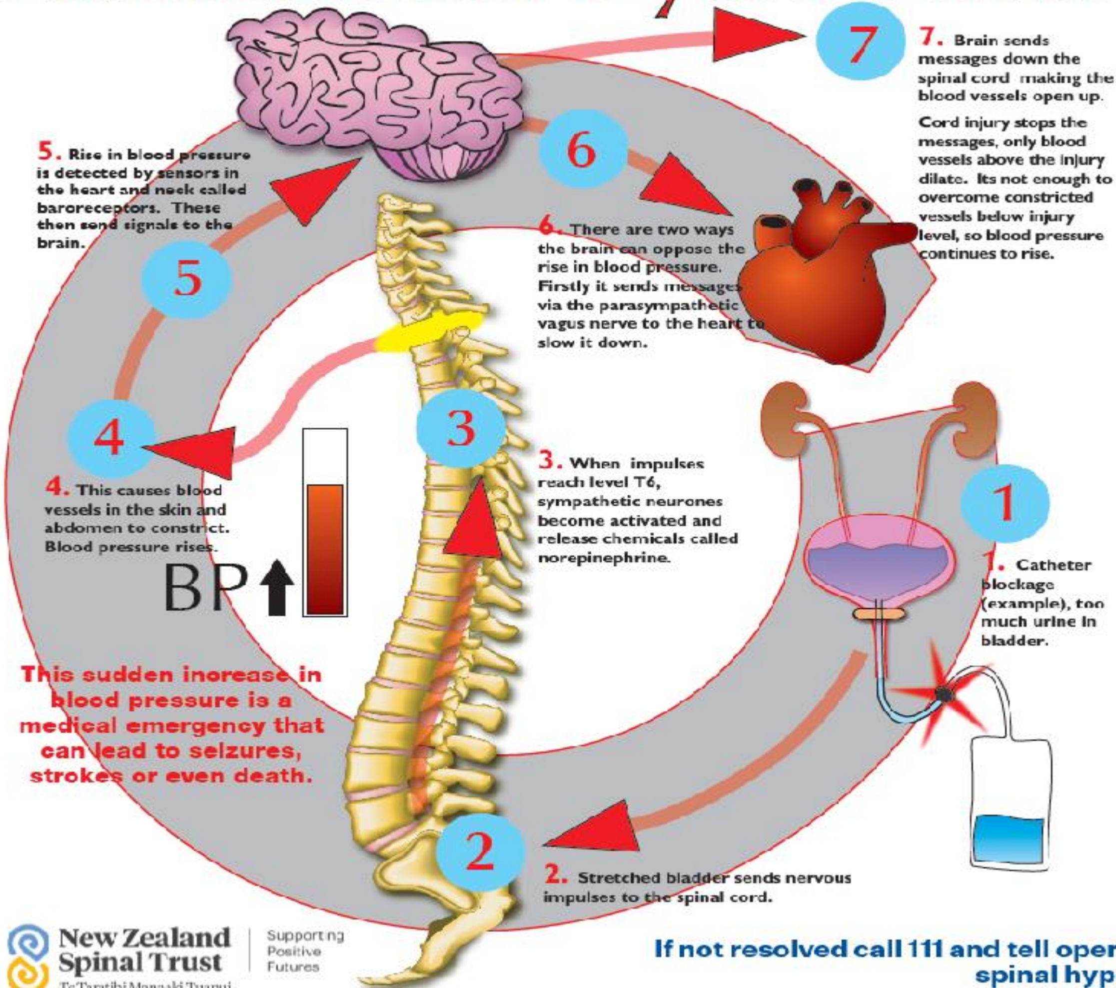
Treatment

- Skin: Check skin for any signs of irritation – pressure areas, ingrown toenails, sunburn, burns from something else. Has patient had a knock to their lower body – could it be a bone fracture?
- Pain: If pain related e.g. post op, then analgesia to be given. Post op patients should receive regular analgesia.
- Blood pressure should be monitored at regular intervals. A manual sphygmomanometer is preferred as more accurate than electronic machines in cases of very high or very low BP.
- If the cause is not quickly or easily identified, pharmacological intervention may be required – at direction of medical staff. Glyceryl trinitrate spray (GTN) can be used to lower BP. Be aware that GTN can lower BP significantly, causing hypotension. GTN spray is contraindicated if a patient has recently used a medication for erectile dysfunction such as Sildenafil or Tadalafil. Appropriate medication to be prescribed by Doctor. BP to be monitored until stabilised, then for next 2 hours.

Prevention/minimisation

- Prevention/minimisation of AD – Patient/family/whanau/carer education. Patient to be aware of what is normal for them. A Medical Emergency card is given to all patients and should be carried with them.
- Ensure catheter tubing is not kinked, follow planned bladder management.
- Follow planned bowel care regime.
- Ensure skin is checked regularly (at least twice daily), pressure relief is undertaken frequently, and clothing is appropriate.
- Regular analgesia for post op patients.

Poster



Any person with a spinal cord injury at or above T6, after spinal shock has resolved is at risk of autonomic dysreflexia.

Signs & Symptoms

- Flushing and sweating above the injury level
- Nasal stuffiness
- Goose bumps and paleness below injury level
- Sudden high blood pressure (hypertension)
- Pounding headache
- Slow heart rate (bradycardia)
- Blurred vision or spots in vision
- Irregular heart beat
- Anxiety or apprehension
- May have no symptoms (silent autonomic dysreflexia)

Most Likely Causes

The most common cause for autonomic dysreflexia (AD) is bladder distension (e.g. due to blocked catheter or detrusor sphincter dyssynergia), followed by bowel distension.
Other causes: Bladder or kidney stones, urinary infection, bowel impaction, fracture, heterotopic bone, surgery.
Pressure injury - intense pain, sunburn, ingrown toenail.
Reproductive – sex, ejaculation, menstruation, pregnancy/ labour.

Treatment

- Recognise the signs and symptoms of AD
- Check blood pressure and monitor frequently
  - NB Patients with SCI above T6 have (low systolic blood pressure of 90-110mmHg)
- Sit the person up, lower the legs
- Loosen any clothing or constrictive devices
- Survey the patient looking for the underlying cause and correct if found:
  - Bladder
    - Insert a catheter if patient does not have one, using lignocaine jelly
    - Check existing catheters for kinks, folds, obstructions and correct placement
    - If catheter is blocked - irrigate the bladder with 10-15ml of saline. If catheter is not draining - remove and replace it.
- If systolic blood pressure (top reading) is raised above 150mmHg, consider giving medication to lower it e.g. Glyceryl Trinitrate (GTN) spray, and pain relief e.g. morphine
  Note if the patient has been on PDE5 Inhibitors (Viagra, Cialis, Levitra) in the last 24 hours, see Health Pathways, Spinal Cord Impairment, Autonomic Dysreflexia (Hypertensive crisis) for further information.
- Continue looking for a cause
  - Bowel
    - Faecal impaction- insert lignocaine gel, wait 2 minutes, then insert a lubricated gloved finger into rectum to remove stool
- Look for other causes of AD (as above)
- Monitor blood pressure for at least two hours after episode has resolved
- Document episode in medical records
- Review precipitating cause to look for preventative strategies

For a detailed medical professional treatment flowchart refer: https://www.nzspinaltrust.org.nz/adflowchart

If not resolved call 111 and tell operator it is autonomic dysreflexia (AD) or spinal hypertensive crisis

Case Study

- Mr S is a patient with a spinal cord injury of T6 ASIA A.
- Mr S was up in his wheelchair. He reported to his nurse that he had a pounding headache, and he was clammy. His blood pressure was taken, with a recording of 152/73, which was out of the normal range for this patient (his normal range was 100/60 – 105/70. As this patient was performing intermittent catheters (ISC), there was no catheter tubing to check. Mr S was returned to bed via hoist transfer. The urodynamics nurse was notified, who came and performed an ultrasound of the bladder, which showed no urinary retention. A bowel check was undertaken, which showed the bowel was empty. Analgesia was given, with good effect. After Medical review, a urine specimen was obtained and bloods were taken (as patient also complaining of chest pain). The result from the urine specimen indicated a urinary tract infection (UTI), Mr S commenced on oral antibiotics.
- Mr S recovered quickly from his first episode of AD. Mr S is very proactive with his rehabilitation and responded well to education given.

Take home message

AD is a medical emergency, because of elevated blood pressure, requiring prompt attention! The EWS (Early Warning Score) does not reflect the urgency of the situation as the patients systolic blood pressure reading could read 140 (a normal reading for a patient who does not have a T6 or above SCI), but for a patient with a T6 or above, it can be significantly high.

It is important to listen to the patient/family/carer as they know their signs and symptoms and what could be a likely cause of the AD.

If you come across AD in the community setting, and the cause cannot be rectified – then phone for an ambulance 111.

References

- New Zealand Spinal Trust www.nzspinaltrust.org.nz
- Burwood Spinal Unit Policies and Procedures
- Christopher & Dana Reeve Foundation www.ChristopherReeve.org/factsheets
- Presentation on Autonomic Dysreflexia by Dr Richard Ponton Burwood Spinal Unit