PREVENTION AND MANAGEMENT OF STROKE COMPLICATIONS

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CONFLICTS OF INTEREST

- None
OBJECTIVES

- Review the complications of stroke
- Review management and prevention of these complications
WHY IS THIS IMPORTANT?

- Medical complications of stroke can hinder recovery and are associated with poorer outcomes independent of stroke severity and age.
- Most complications arise within the first few weeks of stroke, i.e. during hospital and rehab stays.
- Many complications can be prevented, and if not, early recognition and treatment can be effective.
GENERAL MANAGEMENT

- Appropriate investigations to determine stroke mechanism
- Individualized care plans to address nutrition, oral care, mobilization, etc
- Discharge planning should begin at the time of admission and continue throughout the hospitalization
- Screen for depression or vascular cognitive impairment
COMPLICATIONS

- Cardiovascular
- DVT/PE
- Temperature
- Mobilization
- Continence
- Nutrition/Dysphagia
- Oral Care
- Seizure
- Pneumonia
- UTI
- Glucose

*This list just highlights a few of the complications*
CARDIOVASCULAR

- Stroke and CAD share several risk factors. Watch for signs of MI, CHF, arrhythmias.

- Investigations:
  - Initial ECG followed by daily ECG for the first 72 hours post-stroke to detect a-fib and other arrhythmias
  - Patients with no clear stroke mechanism (i.e. normal neuroimaging) should have a Holter monitor
  - Echocardiography should be considered for patients with possible embolic stroke and normal neuroimaging
  - Carotid dopplers
DVT/PE

- Assess for risk of venous thromboembolism (VTE)
- High risk: unable to move lower limbs, unable to mobilize independently, history of DVT/PE, dehydration, cancer
- Prevent VTE with:
  - Early mobilization
  - Hydration
  - DVT prophylaxis (ischemic stroke): LMWH, unfractionated heparin in renal failure, anti-embolism stockings NOT recommended
  - DVT prophylaxis (hemorrhagic stroke or other active bleeding): anti-embolism stockings are reasonable, antiplatelets and anticoagulants should be held for at least 48 hours after onset, consider treatment after 48 hours in consultation with Hematology if deemed high risk for VTE
TEMPERATURE

- Temperature should be monitored q4h for the first 48 hours, then as per routine
- For temperature greater than 37.5°C, monitor more frequently, investigate for possible infection (UTI, pneumonia, pressure ulcers) and treat with antipyretic and antibiotics as required
MOBILIZATION

- Early: ideally within 24 hours of stroke onset
- Contraindications: arterial puncture for interventional procedure, medically unstable, low O2 saturation, lower limb fracture/injury
CONTINENCE

- Indwelling catheters should be avoided to reduce risk of UTI. If required, reassess daily
- Screen for and manage
  - Urinary incontinence: bladder-training with timed and prompted toileting
  - Urinary retention: assess post void residuals and use in-out catheter as needed
  - Fecal incontinence, constipation: bowel management program
- If continence is an issue, look for causes such as UTI, medications, mobility, cognition, diet
NUTRITION AND DYSPHAGIA

- Initial swallowing screening should completed for all stroke patients, keep NPO until this screening is complete
- If initial screening shows abnormalities, refer to speech language pathology
- Assess hydration status
- Refer to dietitian for enteral nutrition support (ie NG tube feeds), or to ensure nutrition and fluid needs are met if diet alterations are recommended by SLP
ORAL CARE

- On admission, assess oral care, use of dental appliances
- Assess if patient has the necessary neuromotor skills to safely wear dentures
- Inhalation of bacteria in pharyngeal material/gingiva can lead to aspiration pneumonia
- Good oral care can reduce the incidence of pneumonia
New-onset seizures in acute stroke patients (within 24 hours of stroke) should be treated with short-acting medications (benzodiazepines), long-term anticonvulsants are not required.

Patients with post-stroke seizure should be monitored for recurrent seizure activity.

Prophylactic use of anticonvulsants in ischemic stroke is NOT recommended, it may negatively affect neural recovery.

Patients with one or more seizures in the early (within 4 weeks of stroke) or late (after 4 weeks) post-stroke period:

- Should be investigated for precipitating factors (ex. Infection), and may need EEG.
- Treatment is the same as for seizures in other neurologic conditions.
PNEUMONIA

- The most common cause of fever within first 48 hours after acute stroke
- Usually related to aspiration
- Increased risk of death
- Risk factors associated with pneumonia: age >65, speech impairment, cognitive impairment, severity of post-stroke disability, dysphagia, decreased LOC, facial palsy, brainstem stroke, mechanical ventilation
- Prevention of pneumonia: semi-upright position, oral suctioning, oral care, early swallow assessment
UTI

- Very common
- Risk factors: older age, foley catheters, female, stroke severity
- UTI is associated with poorer outcomes
- Prevention:
  - Avoid catheter use if you can
  - Have low threshold for testing with urinalysis and culture
For patients with ischemic stroke or TIA, screen for diabetes at time of admission with HbA1c, fasting glucose or 75 g OGTT

Glycemia management within first 72 hours of stroke

- Controversial
- No specific target glucose control for stroke patients
- As with other non-critically ill hospitalized patients, try to maintain glucose below 10 mmol/L
- Avoid hypoglycemia
CONCLUSIONS

- Medical complications of stroke are often preventable
- Be mindful of these complications to improve your patients outcomes
- Good stroke care relies on an interdisciplinary team approach
- Strong evidence indicates that patients are more likely to survive, return home and become independent in looking after themselves if they spend time in a Stroke Unit (Stroke Unit Trialists' Collaboration, 2013, Cochrane Review)
QUESTIONS?

- Thanks for your attention!
Canadian Best Practice Stroke Recommendations
Canadian Diabetes Association 2013 Guidelines