Post-operative Care of Neurosurgical Patients

Neurosurgical patients tend to be confused postoperatively and can be anything between sleepy and all the way up to combative. This often resolves within the first 2-6 hours.

Neurological:

- Check GCS, limb assessment and pupil size and reaction ¼ hourly for 1 hour, ½ hourly for 2 hours and hourly for the next 4 hours, even overnight. Thereafter, neurological observations can be done 2 hourly, but **NO LESS OFTEN** than that. If the patient has been stable for >24hrs, these can be done 4 hourly
- Use a second opinion and the pupillometer if unsure of pupillary reaction
- Report any deterioration (apart from E4 to E3) to the ICU registrar
- Keep headrest at 30-45 degrees to aid cerebral drainage, unless flat bed rest has been ordered post-operatively (e.g. post coiling)

Respiratory:

- Record observations at the same time as neurological assessments above
- Check that patients can maintain their airway; patients often need naso/oropharyngeal support for 1-2 hours post-operatively, as neurosurgeons do not want them to cough too forcefully when extubating and they are still fairly well sedated. If a patient is deteriorating or unable to maintain their airway after 1 hour, check with the neurosurgeon and ascertain what level of consciousness is expected of the patient. The patient might need an urgent (within 30 mins) CT scan
- Post fossa surgery patients can take longer to wake up and can have difficulty maintaining their airway – report a weak/ineffective cough as aspiration risk is very high
- Maintain SpO2 >95% and paO2 >10kPa by titrating O2 accordingly. Use humidified O2 via facemask initially and change to nasal cannula as able (unless patient had **transphenoidal surgery*** - keep facemask as needed for these patients)
- Check ABG 4 hourly
- Auscultate chest 4 hourly and assist with secretion removal as needed

Cardiovascular:

- Maintain MAP >70mmHg, use Metaraminol infusion if required. Patients often only require this overnight and as long as the patients' neurological status remains stable lower MAPs can be accepted after 24 hours
- Calibrate a LiDCO and administer fluid boluses to achieve euvolaemia
- Use NaCl if Na+ <140mmol/l and CSL if Na+ >140mmol/l
- Maintain K+ >4.0mmol/l, MgSO4 > 1.0mmol/dl and PO4->1.0mmol/l
- Post-op ECG and daily ICU bloods

Gastrointestinal:

- If there are no signs of airway protection difficulties, patients can progress from sips of water to a full diet as able
- If patients cough after having sips of water, **KEEP NBM** and arrange for formal SLT assessment. Observe patients who had post fossa surgery closely: swelling/bleeding into that area will increase pressure on the brainstem, resulting in swallowing difficulties
- Record oral fluid intake closely – if patients cannot drink, ensure background fluids are running depending on Na+ levels (see cardiovascular)
- Nausea is a big problem after neurosurgery: ensure Ondansetron, Cyclizine and Metoclopramide are prescribed IV as required and Prochlorperazine (Stemetil) IM is available if the first 3 have no effect. Post fossa patients should have Ondansetron IV prescribed regularly TDS with the other 3 anti-emetics on PRN side

Renal:

- Most patients come with a catheter – strict hourly fluid balance, maintaining euvolaemia
- If no catheter in situ and a patient has not passed urine within 6 hours post-operatively, do bladder scan and discuss catheter insertion (some neurosurgical consultants want to avoid IDC insertion due to risk of infection)
- If UOP >300ml/hr for 2 hours, inform registrar and monitor Na+ levels – see separate sodium imbalances quick guide

Elimination:

- Start Sodium Docusate and Senna regularly from the first day, straining can worsen headaches and even cause re-bleeding. Add Laxido if BNO for 3 days

Pain:

- Can administer 2mg Morphine IV in 5 minute intervals up to 10-20mg (depending on level of pain, prescription and patient consciousness level) in the first 24 hours post-op
- Patients tend to have strong headaches – give Paracetamol IV regularly
- **DO NOT** give Ibuprofen – it has blood thinning properties and these patients are at risk of bleeding

Postoperative neurosurgical patients cont..

Skin/Wound Care:

- If a patient has to remain on flat bed rest, ensure they keep in a supine position with their legs straight and turn once to check their back in that period
- **Chronic Subdural** patients must be sat up very gradually to avoid a re- collection
- All other patients turn as per PUP protocol and maintain headrest at 30-45 degrees
- If a patient had aneurysmal coiling:
    - Monitor groin stab site(s) and pedal pulses at the same time as neurological observations and refer urgently if haematoma/swelling/bleeding occurs
    - Use Femstop if needed
- If a patient had **transphenoidal surgery***:
  Transphenoidal surgery is an endoscopic procedure going up through the nose to remove pituitary tumours and meningiomas
    - Monitor bleeding from nose and ask patient if they can taste blood/have a salty taste in the back of their throat when doing obs – if so: urgent neurosurgical review, patient might have CSF leak
    - Use nasal bolsters for oozing from nose and record how many bolsters used
    - If more than 3 bolster changes in 1 hour, urgent neurosurgical review
    - 24 hours post-op patients can start with nasal douching – skull base tumour CNS will offer assistance
- If a patient had aneurysmal **clipping or a craniotomy**:
    - Observe wound for excessive bleeding, oozing
    - Check drain patency and apply prescribed suction requirement (gravity/half suction/full suction) when doing obs
    - Record drain output at midnight and incorporate in fluid balance
    - In most cases wound drains get removed after 24-48 hours prior to discharge to the ward
- If a patient had **Gliolan** (a substance that helps neurosurgeons see the tumour)
    - Ensure the patient is in a darkened side room or the curtains are closed at all times with the lights off. If the patient brought sunglasses, ensure they wear them
    - Gliolan causes hypersensitivity to light for 24 hours post operatively; patients will get strong headaches if exposed to light
    - After 24 hours, patients should refrain from sun exposure for at least a week as they can become sunburnt extremely quickly
- If a patient had an EVD inserted: see separate guide
- If a patient had a craniotomy for evacuation of a Chronic SubDural Haematoma (CSDH), be cautious with sitting them up. Lie flat for first 12-24 hrs then up to 30 degrees unless told otherwise by NS team

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