Nursing Management of Patient with Spinal Injury in the Acute Phase

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Mechanism of injury

Primary

- Contusion
- Hyperflexion
  Anterior dislocation, rupture posterior ligament
- Hyperextension
  Rupture anterior ligament
- Axial loading (Compression)
- Rotational
  Rupture posterior ligament complex, fracture vertebral body
Mechanism of injury

Secondary

• Are result of ...reactive processes
  – Ischaemia
  – swelling
Clinical signs of SCI

- Pain in the neck or back
- Bruising or laceration
- Numbness or tingling of limbs
- Arms and/or legs cannot move (paralysis)
- Loss of bladder and/or bowel control (sphincter disturbance)
- Feeling short of breath or inability to breathe (upper cervical injury)
Acute Management

• Preserve life by active resuscitation (ABCDE + FGH)
  ✓ Airway
  ✓ Breathing
  ✓ Circulation
  ✓ Disability
  ✓ Exposure
  ✓ Full set of vital sign
  ✓ Give comfort
  ✓ History
• Prevent further spinal cord injury by presume all are unstable
• Early detection of deterioration & prevent of complication
• Provide physical & psychological support
• Education of patient & relative for acute care
Principle of handling

• High index of suspicion
• Consider all unstable until proven
• Transfer patient in ONE PIECE (Log roll)
• Complete radiological assessment
• Detail neurological assessment
• Pharmacological regime - Steroid
• Early stabilization for unstable injuries
Acute Management (Cervical)

- Spine immobilization
- Cervical collar
- Safeguard the cord by controlling neck movement
- Sandbags
- Place on either side to further minimize cervical movement
- NO flexion nor hyperextend of head
- Keep head NEUTRAL position
Airway + C-spine Control

- Hypoxia from impaired ventilation or aspiration
- Intubation with fiberoptic bronchoscope
- Nasotracheal or oral-tracheal intubation by anesthetists
- Chin-lift & modified jaw thrust maneuver
- Cricothyroidectomy if intubation fails or facial trauma

• NO HEAD TILT
Breathing

- C5 above injury usually need ventilation support
- Partial phrenic nerve palsy (C3-5)
- Intercostal paralysis (T1-7)
- Impaired ability to expectorate (T6-12)
- Monitor ABG & respiratory parameters to assess oxygenation esp during first 3 days
Circulation

• Hypotension-Hypovolemic shock due to hemorrhage
  – Restore tissue perfusion & correct physiologic abnormalities
  – Rapid fluid & blood replacement (CVP monitoring)
  – Foley’s catheter to monitor tissue perfusion
  – Pharmacological agents e.g. dopamine
  – Close monitoring of vital signs
  – Cardiac monitoring & urine output for any complication
Circulation

• Hypotension-neurogenic shock
  – Sympathetic outflow is interrupted
  – Autonomic dysfunction
  – Hypotension
  – Bradycardia
  – Peripheral vasodilatation (loss of vasomotor tone)
  – Fluid replacement with caution to avoid pulmonary oedema
Circulation

- Hypotension-spinal shock
  - Onset: 0-12 months
  - Transient physiological reflex depression of cord function below the level of injury
  - Complete loss of neurologic function including reflexes & rectal tone
  - Severe autonomic dysfunction-
    - hypotension (Initiate ↑BP and followed by ↓BP),
    - hypothermia,
    - bradycardia,
    - peripheral vasodilatation,
    - Flaccid paralysis,
    - priapism in male
  - Usually occur injuries above T6
  - Duration varies from a period of few hours up to several weeks
  - Ends with the return of ANAL & BULBOCAVERNOSUS reflex
Other Management

• Off spinal board as soon as possible after completed assessment with Log-roll method
• Provide pressure relieving materials on pressure area e.g. heel protectors
• Complete bed rest and clear notice of position needed e.g. No prop-up
• Provide psychological support to patient and the relatives
• Prepare for the steroid infusion if needed
Steroid infusion - Methylprednisolone

- Strong anti-inflammatory, immunosuppressive & anti-allergic
- Reduce 2nd effects of acute SCI (spinal cord edema)
- Acute injury within 8 hours of injury
- Administration
  - Loading: 30mg/kg BW over 15 mins
  - Maintainence: 5.4mg/kg BW/hour for 23 hrs

Caution
  - Arrhythmias
  - Infection
  - DM control
  - GI bleeding
Steroid infusion

• Exclusion criteria
  – Age<13 yrs old
  – Nerve root injury only
  – Pregnancy
  – Addiction to narcotics
Thank You !