Nursing Management of Spinal Trauma

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7 cervical vertebrae
12 thoracic vertebrae
5 lumbar vertebrae
5 sacral vertebrae
4 coccygeal vertebrae

Content

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3. Causes
4. Mechanism of injury
5. Consequences and interventions
6. Trauma care / nursing care plan
7. Complications
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Objectives

One

Nursing management
  – Provision of quality care
  – Achievement of optimal outcomes

Nurse
  – Accountability in practice
  – Competence in performance

Objectives

TWO

Patient profile
  – Sudden
  – Life long management
  – Disease of the young
  – Legal implications
  – Complications
  – Social and psychological implications
Objectives

THREE
Care plan
– collaborative practice

Anatomy of Spine

5 sessions – effect our determination of care plan
• Bone – 26 vertebral bones
• Joints
• Spinal nerves – 31

The spinal cord extends from the skull to the first lumbar vertebra
• It consists of gray matter – located centrally and white matter – surrounding the gray matter
The white matter of the spinal cord consists of ascending and descending fiber tracts
• ascending tracts transmitting sensory information (from receptors in the skin, skeletal muscles, tendons, joints, & various visceral receptors)
• descending tracts transmitting motor information (to skeletal muscles, smooth muscle, cardiac muscle, & glands).
The spinal cord is also responsible for spinal reflexes.

Causes

• Auto accidents
• Falls from height
• Sports
Mechanism of injury

Cervical Spine Injury
- High velocity – needs a lot of care
- Low velocity

Consequences and interventions

Consequences
- Sprains
- Dislocation
- Fractures
- Ligamentous injury
- Musculoskeletal injury
- Neurological structures

Interventions
- Surgical / conservative

Trauma Care

- Assess with care – poor assessment end up poor handling
- Handling with care – poor handling end up disaster
- Plan care with care – poor planning end up poor quality of care
- Implement care with care – poor implementation end up trouble

Questions Ask

- Who
- When
- What
- Where
- How
- Watch out
Who

- Health care team
- Patient
- Relative

When

- Immediate
- First 6 –8 hours
- First 24 hours
- First 48 hours
- First 72 hours are the crucial time
- Within 7 days

Steroid protocol

- Methylprednisolone – bolus dose of 30 mg / kg BW
- Follow by infusion at 5.4 mg / kg / hour for 23 hours
- Should be given within first 6-8 hours

Remarks: about 40% of spine injured patients may develop some GI bleeding

Spinal Shock

Loss of continuous tonic impulses from the brain
- Transient suppression of reflexes below the SCI
- Flaccid paralysis
- Absence of cutaneous/proprioceptive sensation
- Loss of autonomic function
- Cessation of all reflex activities below the site of injury
Spinal shock (cont’d)

- 24-48 (72) hour period of paralysis, hypotonia, & areflexia,
- Return of reflex activities and development of spasticity below level of injury indicates end of spinal shock

What

- Provide an optimum environment
- Prevent complications
- Protect further injuries
- Ensure the optimal results

Where

- Site
- Accident and Emergency Department
- Operating theatre
- Spinal unit / ICU
- General ward
- Rehabilitation

How

- Evaluation of ABCDE
- Handling technique
- Steroid protocol
- Surgical intervention
- Precise care plan for prevention of complications and discharge
**Evaluation of ABCDE**

A Airway maintenance with care and control of a possible injury to the cervical spine
B Breathing control or support
C Circulation control and blood pressure monitoring
D Disability: the observation of neurological damage and state of consciousness
E Exposure of the patient to assess skin injuries and peripheral limb damage.

**Handling Technique**

Log-rolled, sufficient team members working together to keep neck and spine immobilized

Properly immobilized: in-line immobilization, stiff neck cervical collar or sandbags

Transported in a neutral position: i.e. supine

**Nursing Care Plan**

- Physiologic
- Psychologic
- Environmental

Need to revise from time to time in a collaborative approach

**Nursing Care Plan (Cont’d)**

- Assessment – vital signs, motor and sensory functions
- Immediate care
  - Ventilation - Chin-lift or jaw-thrust maneuver
  - Haemodynamic parameters – ensure optimal end-organ perfusion
  - Gastrointestinal – gastric tube for the first 24 hours
  - Injured part – stabilization
  - Pain relieve
  - Psychosocial
Nursing Care Plan (Cont’d)

• Intermediate care
  – Prevention of complications
    • Temperature control
    • Bed & beddings
    • Head to toe care

Complications

Immediate
• Respiratory failure
• Atelectasis
• Pneumonia
• Spinal shock

Nursing Care Plan (Cont’d)

• Rehabilitation phases
  – Multidisciplinary
    • Prevention of complications
    • Maintenance of optimum health status
    • Maintenance of quality of life

Complications (cont’d)

Late
• Autonomic dysreflexia (avoidance of any stimuli such as full bladder, distended bowel, or skin irritation)
• Infection of any kind
• Decubitus ulcer
• Malnutrition & dehydration
• DVT
• GI – bowel elimination, cholecystitis/cholelithiasis
• Genitourinary –bladder training program
• Contractures / spasticity
Watch out

- Instability of the vertebral column
  - Instability comes from a fracture in one of the bony parts of the vertebra, specifically the vertebral body, the lamina or the pedicles
- Actual or potential **neurological injury**
- Education to patient and family members

Recommendations

- Prevention of injuries
  - Persuasion
  - Legal requirements
  - Provision of automatic protection
- Establishment of SIU
  - Quality of care

Conclusion

- Prompt response
- Close observation on varied signs and symptoms of spinal cord injury
- Lifelong management
- Challenge
  - Improving neurological outcome
    - Complementary medicine ??
  - Prevention of complications

Q&A

Be Honest