OBJECTIVES

- Review A & P of neurological system
- Differentiate between normal and abnormal findings including age related changes
- Identify diagnostic exams including interventions
- Discuss etiology, pathophysiology, manifestations and collaborative management of:
  - Clients with HA
  - Clients with seizure disorders
  - Clients with lower back pain including laminectomies

ANATOMY

- Brain
- Spinal cord
- Peripheral nervous system
  - Autonomic nervous system
  - Sympathetic
  - Parasympathetic
ASSESSMENT OF NEURO FUNCTION

- Health history
- Assessment
  - LOC
  - PERRLA
  - Language/speech
  - Motor function
  - Reflexes
  - Glasgow Coma Scale
- Changes associated with aging
  - Motor/sensory ability
  - Mental status changes

ASSESSMENT OF REFLEXES

BABINSKI ‘S SIGN

- Fanning of toes abnormal for anyone older than 1 year of age
GLASGOW COMA SCALE

Table 1: THE GLASGOW COMA SCALE AND SCORE

<table>
<thead>
<tr>
<th>Feature</th>
<th>Scale Responses</th>
<th>Score Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Eye opening</td>
<td>Spontaneous</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>To speech</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>To pain</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>None</td>
<td>1</td>
</tr>
<tr>
<td>Verbal response</td>
<td>Comatose</td>
<td>5</td>
</tr>
<tr>
<td></td>
<td>Confused</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>Oriented</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>No response</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>None</td>
<td>1</td>
</tr>
<tr>
<td>Body motor response</td>
<td>Deep commands</td>
<td>5</td>
</tr>
<tr>
<td></td>
<td>Comatose</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>Moribund - Normal</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>General - Abnormal</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>None</td>
<td>1</td>
</tr>
</tbody>
</table>

TOTAL COMA SCORE: 3 to 15

DIAGNOSTIC TESTS

- X-ray
- CT scan
- MRI/MRA
- PET scan
- Cerebral angiogram
- Carotid ultrasound
- EEG
- EMG
- LP

HEADACHE

- Most frequent health problem
- Migraine
  - Common
  - Classic
- Cluster HA
- Tension HA
HEADACHE
INTERDISCIPLINARY CARE
- Diagnosis
- Medications
- Alternative therapy
- Teaching
- Nursing Dx

SEIZURES
- Chronic disorder
- Affects 2.5 million people in US
- New onset seizures > 180,000/year
- Increasing incidence
  - Technological advancement
- Isolated seizures
  - Febrile
  - Infection
  - Metabolic
  - Toxins
  - Alcohol withdrawal
  - Electrolyte imbalance

SEIZURE - PATHO
- Rhythmic and repetitive hyper-synchronous electrical activity of the brain
- Causes
  - Several theories
- Seizure threshold
- Un-provoked seizure - no cause identifiable
- Provoked seizure
  - Fever,
  - Metabolic or endocrine
  - Meningitis
  - Withdrawal
  - Cerebral edema/bleeding
PARTIAL SEIZURES
- Simple partial seizure
  - Motor involvement
  - Sensory involvement
  - Autonomic nervous system disruption
  - Psychic manifestation
- Complex partial seizure
  - Repetitive non-purposeful activities
  - No consciousness
  - Amnesia
  - Aura

GENERALIZED SEIZURES
- Absence seizure
  - Cessation of motor activity
  - 10-20 seconds each
  - Up to several hundred/day
- Tonic clonic seizure
  - Tonic phase
    - No breathing
    - Muscles stiff, extended
  - Clonic phase
    - Contraction and relaxation of muscles
    - Hyperventilation
    - Postictal period
    - Unconsciousness

STATUS EPILEPTICUS
- Usually tonic clonic
- Very short rests between seizures
- Life threatening medical emergency
  - Respiration not adequate
  - Increased metabolic need
SEIZURE - DIAGNOSIS
- MRI
- CT
- EEG
- LP
  - If infection or tumor suspected
- Blood work
  - CBC
  - BMP
  - Blood glucose

SEIZURE MEDICATIONS
- To stop seizures in progress:
  - Diazepam (Valium)
  - Lorazepam (Ativan)
- Most common to maintain seizure free:
  - Phenytoin (Dilantin)
  - Valporic acid (Depakote)
  - Phenobarbital
  - Carbamazepine (Tegretol)
  - Gabapentin (Neurontin)
  - Clonazepam (Klonopin)
- Surgery

NURSING CARE
- Seizure precautions
- Health promotion
  - Stay on medication even if no seizures
  - No driving
  - Teach family first aid in seizures
- Assessment
  - Health history
  - Physical assessment
- Nursing Dx
  - Risk for ineffective airway clearance
  - Risk for injury
  - Anxiety
LOW BACK PAIN
- Common complaint seen by providers
- Strains of muscle and tendons
- 5 causes
  - Local pain
  - Referred pain
  - Pain of spinal origin
  - Radicular back pain
  - Muscle spasm pain

FACTORS ASSOCIATED WITH LOWER BACK PAIN
- Mechanical injury or trauma
- Degenerative disorders
- Systemic disorders
- Referred pain
- Others

MANIFESTATION OF LOWER BACK PAIN
- Alteration in gait
  - Stiff walk
  - No bending
  - Limp
- Neurological involvement
  - Sensation varies between extremities
- Pain
  - Stabbing pain
  - Radiating pain
  - Assessment tests
INTERDISCIPLINARY CARE
- Diagnosis
  - History
  - Assessment
  - Tests
- Medications
  - NSAIDS
  - Muscle relaxants
  - Steroids
- Conservative treatments
  - Exercise
  - Heat
  - Education
- Health promotion
  - Exercise
  - Quit smoking
  - Loos weight
  - Correct posture
  - Seat support
  - Correct lifting
- Nursing Dx
  - Acute pain
  - Knowledge deficit

HERNIATED INTERVERTEBRAL DISK
- Patho
  - Ruptured disk - cartilage surrounding disk ruptures
  - Slipped disk - herniated nucleus pulposus
  - Excrutiating pain
  - Limited mobility
- Incidence
  - More common in men
  - Most often L4-L5 or L5-S1

MANIFESTTION RUPUTERES DISK
- L4-L5
  - Pain
  - Muscle spasms
  - Paresthesia
- L5-S1
  - Pain
  - Paresthesia
- C5-C6
  - Pain
  - Decreased reflexes
INTERDISCIPLINARY CARE
RUPTURED DISK

- Diagnosis
  - X-ray or CT scan
  - EMG
  - Myelogram

- Medications
  - NSAIDs
  - Muscle relaxant

- Conservative treatment
  - Normal activity
  - Meds
  - Teaching

INTERDISCIPLINARY CARE
RUPTURED DISK - CONT.

- Surgery
  - Laminectomy - removal of part of vertebral lamina
  - Spinal fusion - wedge shaped bone inserted between vertebrae
  - Microdiskectomy - less trauma to surrounding tissues

NURSING CARE LAMINECTOMY

- Pre-op teaching
  - Log-roll
  - TCDB
  - Meds

- Post-op care
  - Minimize stress to spine
  - Assessment
  - Encourage breathing exercise
  - Increase mobility
HEALTH PROMOTION LAMINECTOMY
- Proper body mechanics
  - Broaden base when standing
  - Use arm and leg muscles when lifting
  - Bend knees
  - Get close to object to be lifted
  - Back support belt

NURSING DIAGNOSIS HERNIATED DISK
- Acute pain
- Chronic pain
- Risk for injury
- Constipation

NCLEX
- What is the primary responsibility of the nurse during a client’s motor seizure?
  - A. Inserting a plastic oral airway between the teeth
  - B. Determining whether an aura was experienced
  - C. Administer the prescribed PRN anticonvulsant
  - D. Clearing the immediate environment for client safety
The neuro assessment of a client who can include the Glasgow Coma Scale (GCS). Which does the nurse evaluate to assess the client’s score on the GCS? (Check all that apply)

- A. Ability of pupils to react to light
- B. Degree of purposeful movements by the client
- C. Appropriateness of client’s verbal response
- D. Stimulus necessary to cause the client’s eyes to open
- E. Symmetry of muscle strength of the client’s extremities

Which clinical indicator does the nurse expect to identify when assessing a client admitted with a herniated disk?

- A. Pain radiating to the hip and back
- B. Bowel and bladder incontinence
- C. Paralysis of both lower extremities
- D. Overgrowth of tissue on the lower back