Neurological Infections, Autoimmune Disorders, and Neuropathies

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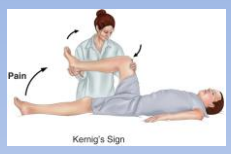
Infectious Neurological Disorders

- Meningitis
- Brain Abscess
- Encephalitis
- Creutzfeildt-Jakob disease (CJD) and variant CJD

Meningitis

- Types
- Transmission
- S/S
  - Headache, fever, vomiting, Δ LOC, nuchal rigidity, + kernig's & brudsinski, photophobia, opisthotonis
- Dx
- Treatment/ Management



Kernig's Sign

Brudzinski's Sign

Medical Management #1

- Prevention by meningococcal vaccine to youth 11 to 12 years of age; booster at 16. First year college students and members of the military
- Early administration of high doses of appropriate IV antibiotics for bacterial meningitis
- Dexamethasone
- Treatment for dehydration, shock, and seizures

Nursing Management

- Frequent or continual assessment, including VS and LOC
- Pain and fever management
- Protect patient from injury related to seizure activity or altered LOC
- Monitor daily weight, serum electrolytes, urine volume, specific gravity, and osmolality
- Prevent complications associated with immobility
- Infection control precautions
- Supportive care
- Measures to facilitate coping of patient and family

Brain Abscess

- Prevention
- S/S
  - HA worse in AM, fever, vomiting, neuro deficits, S/S of ↑ ICP
- Dx
  - CT, MRI
  - CT guided aspiration

Brain Abscess #2

- Medical management
  - Control ICP
  - Drain abscess
  - Administer appropriate antibiotic therapy; corticosteroids may be used to treat cerebral edema
- Nursing management
  - Frequent and ongoing neurologic assessment
  - Administer medications
  - Assess response to treatment
  - Provide supportive care

Encephalitis

- Etiology
  - Bacterial
  - Vector
  - Fungal
- S/S
  - headache, fever, confusion, hallucinations; vector borne—rash, flaccid paralysis, Parkinson-like movements
- Treatment/ management
  - Medical
    - Acyclovir
    - Amphotericin
  - Nursing
- Anthropod Virus Encephalitis
- Fungal Encephalitis

Creutzfeldt–Jakob Disease and Variant Creutzfeldt–Jakob Disease

- Rare, degenerative infectious, transmissible spongiform encephalopathies (TSEs)
- TSEs are caused by prions: small proteinaceous particles that are smaller than viruses and resistant to sterilization
- The disease is not spread by casual contact; vCJD may be contracted through ingestion of infected beef
- Manifestations include affective, sensory, motor, and cognitive impairments
- No effective treatment; progressive and fatal
- Nursing management
  - Prevention of disease transmission; blood and body fluid precautions
  - Supportive care

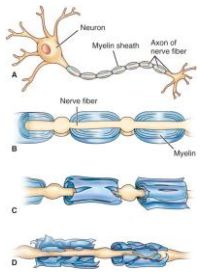
Autoimmune Neurological Disorders

- Multiple Sclerosis (MS)
- Myasthenia gravis
- Guillain-Barre Syndrome

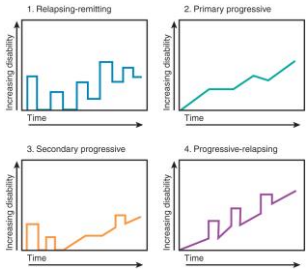
Multiple Sclerosis

- A progressive immune-related demyelination disease of the CNS
- Clinical manifestations vary and have different patterns
- Frequently, the disease is relapsing and remitting; has exacerbations and recurrences of symptoms, including fatigue, weakness, numbness, difficulty in coordination, loss of balance, pain, and visual disturbances
- Medical management
  - Disease-modifying therapies; interferon β-1a and interferon β-1b, glatiramer acetate, and IV methylprednisolone
  - Symptom management of muscle spasms, fatigue, ataxia, bowel and bladder control

Process of Demyelination



Types and Courses of Multiple Sclerosis



Nursing Process: The Care of the Patient With Multiple Sclerosis—Planning

- Major goals may include
  - Promotion of physical mobility
  - Avoidance of injury
  - Achievement of bowel and bladder continence
  - Promotion of speech and swallowing mechanisms
  - Improvement in cognitive function
  - Development of coping strengths
  - Improved home maintenance
  - Adaptation to sexual function

Myasthenia Gravis

- Autoimmune motor disorder
- S/S
- Dx
  - + tensilon test
  - + ice test
  - + acetylcholine receptor antibodies in serum
  - Enlarged thymus gland
  - Electromyography (EMG)
- Treatment/ Management

Medical Management

- Directed at improving function and reducing and removing circulating antibodies
- Pharmacologic therapy
  - Anticholinesterase medications and immunosuppressive therapy
  - Intravenous immune globulin (IVIG)
- Plasmapheresis
- Thymectomy

Myasthenic Crisis

- Result of disease exacerbation or precipitating event, most commonly a respiratory infection
- Severe generalized muscle weakness with respiratory and bulbar weakness
- Patient may develop respiratory compromise failure

Cholinergic Crisis

- Caused by overmedication with cholinesterase inhibitors
- Severe muscle weakness with respiratory and bulbar weakness
- Patient may develop respiratory compromise and failure

Management of Myasthenic Crisis

- Patient education in signs and symptoms of myasthenic crisis and cholinergic crisis
- Ensuring adequate ventilation; intubation and mechanical ventilation may be needed
- Assessment and supportive measures
  - Measures to ensure airway and respiratory support
  - ABGS, serum electrolytes, I&O, and daily weight
  - If patient cannot swallow, nasogastric feeding may be required
  - Avoid sedatives and tranquilizers

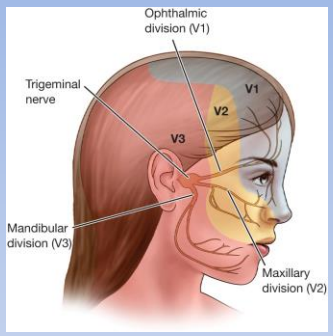
Guillain-Barre Syndrome

- Autoimmune
- Rapid demyelination
- S/S
- Dx
- Treatment/Management
  - ICU
  - Respiratory support
  - Plasmapheresis and IVIG
- Problems/Complications
  - Respiratory failure, autonomic dysfunction, DVT, PE, urinary retention

Cranial Nerve Disorders

- 2 Types
  - Trigeminal Neuralgia (Tic Douloureux)
  - Bell's palsy

Trigeminal Neuralgia (Tic Douloureux)



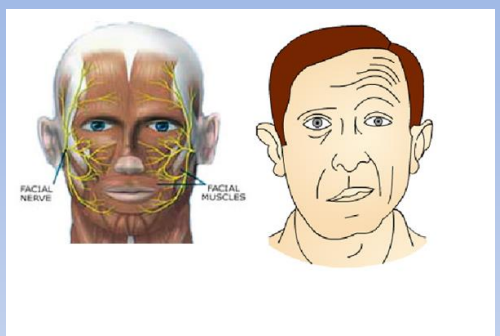
Medical Management #3

- Antiseizure medications such as carbamazepine (Tegretol), gabapentin (Neurontin), phenytoin, or antispasmodic medication baclofen (Lioresal)
- Surgical treatment
  - Microvascular decompression of the trigeminal nerve
  - Radiofrequency thermal coagulation
  - Percutaneous balloon microcompression

Nursing Interventions

- Patient education related to pain prevention and treatment regimen
- Measures to reduce and prevent pain; avoidance of triggers
- Care of the patient experiencing chronic pain
- Measures to maintain hygiene: washing face, oral care
- Strategies to ensure nutrition; soft food, chew on unaffected side, avoid hot and cold food
- Recognize and provide interventions to address anxiety, depression, and insomnia

Bell's Palsy



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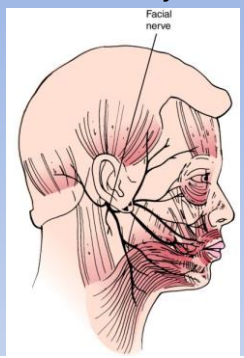

Management

- Medical
  - Corticosteroid therapy may be used to reduce inflammation and diminish severity of the disorder
- Nursing
  - Provide and reinforce information and reassurance that stroke has not occurred
  - Protection of the eye from injury; cover eye with shield at night, instruct patient to close eyelid, use of eye ointment and sunglasses
  - Facial exercises and massage to maintain muscle tone