Chapter 21
Drugs for Neuromuscular Disorders

Muscle Movement Dependent on Body Systems
- Nervous
- Muscular
- Endocrine
- Skeletal

Functioning of Neural Pathways and Muscles, Bones, Joints
- Determined by blood levels of
  - Sodium
  - Potassium
  - Calcium

Muscle Spasms
- Involuntary contractions of muscles
- Diminished level of functioning

Muscle Spasticity
- Results from damage to CNS
- Muscles in continuous state of contraction
- Muscles become stiff
Nonpharmacologic Treatment of Muscle Spasms

- Combined with medication
- History and physical to determine etiology
- Immobilization, heat or cold, hydrotherapy
- Ultrasound, exercise, massage, manipulation

Nonpharmacologic Treatment of Muscle Spasticity

- Physical therapy
- Muscle stretching, strengthening
- Repetitive motion
- Surgery in extreme cases

Goals of Muscle Relaxants

- Minimize discomfort
- Increase range of motion
- Improve ability to function independently

Muscle Spasm Pharmacotherapy

- Analgesics
- Anti-inflammatory agents
- Centrally acting muscle relaxants

Role of Nurse

- Do complete health history, including allergies, drug history, drug interactions
- Establish baseline level of consciousness and vital signs
- Assess for drowsiness and dizziness
- Monitor pain: location, duration, precipitating factors

Role of Nurse (continued)

- Monitor for withdrawal reactions
- Monitor muscle tone, range of motion, degree of muscle spasm
- Provide additional pain-relief measures
- Monitor for side effects
Education of Client

- Those with liver disease, pulmonary/cardiac dysfunction should not take these drugs
- Warn against alcohol and drugs that depress CNS
- Abruptly stopping these drugs can result in seizures

Skeletal Muscle Relaxants

- Treat local spasms from muscular injury
- Decrease pain and tenderness
- Result in increased range of motion

Direct-Acting Antispasmodics

- Act at neuromuscular junction and skeletal muscle
- Suppress hyperactive reflexes
- Are used for spasms associated with CNS disorders

Centrally Acting Muscle Relaxants

- Prototype drug: cyclobenzaprine (Flexeril)
- Mechanism of action: inhibits upper-motor-neuron activity
  - Causes CNS depression, alters simple spinal reflexes
- Primary use: to treat localized spasms
- Adverse effects: CNS depression, hepatic toxicity, physical dependence, anticholinergic effects

Cyclobenzaprine Animation

Click here to view an animation on the topic of cyclobenzaprine.

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Direct-Acting Antispasmodics

- Prototype drug: dantrolene (Dantrium)
- Mechanism of action: interferes with release of calcium ions in skeletal muscle
- Primary use: to relieve dystonias and leg cramps
- Adverse effects: hepatic toxicity, muscle weakness, drowsiness, diarrhea
Drugs for Neuromuscular Disorders

• Assessment
  – Complete health history
  – Physical exam
  – Baseline vitals and labs
  – Baseline level of consciousness (LOC)

Drugs for Neuromuscular Disorders (continued)

• Nursing Diagnoses
  – Pain
  – Impaired physical mobility
  – Risk for injury
  – Deficient knowledge

Drugs for Neuromuscular Disorders (continued)

• Planning
  – Goals
    • Decrease in pain
    • Increased range of motion
    • Reduced muscle spasms
  • Implementation
    – Monitor LOC and vital signs
    – Monitor pain
    – Monitor muscle tone, range of motion, degree of spasm
    – Provide adjunct therapy
  • Evaluation of effectiveness of drug therapy
    – Goals met
    – Expected outcomes met

Centrally Acting Skeletal Muscle Relaxants

Table 21.1 Centrally Acting Skeletal Muscle Relaxants

Direct-acting Antispasmodic Drugs

Table 21.2 Direct-acting Antispasmodic Drugs