

Antiepileptic Agents

NAPNES Guidelines

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Antiepileptic Drugs (AED)

Action

- Alter movement of sodium, calcium, magnesium ions
 - Result in stabilized and less responsive cell membranes
 - Thus decrease the excitability and responsiveness of brain neurons



Antiepileptic Drugs (AED)

Pharmacologic effects

- Increase threshold of activity in the motor cortex
- Act to depress or limit the spread of a seizure discharge from its origin
- Decrease the speed of nerve impulse conduction with a given neuron

Antiepileptic Drugs (AED)

Indications (Use)

- Prevention or control of seizure activity
 - With minimal side effects
- Maintenance therapy
 - Chronic recurring type of seizures
- No one drug controls all types of seizures
 - Particular drugs are indicated for control of specific seizure types



Antiepileptic Drugs (AED)

Types

- Hydantoin
 - Phenytoin (Dilantin)
- Iminostilbene
 - Carbamazepine (Tegretol)
- Benzodiazapine
 - Clonazepam (Klonopin)
- Miscellaneous
 - Gabapentin (Neurontin)
- Barbiturate
 - Phenobarbital



Antiepileptic Drugs (AED)

Other Examples

- Primidone (Mysoline)
- Mephenytoin (Mesantoin)
- Paramethadione (Paradione)
- Valproic acid (Depakote)

Antiepileptic Drugs (AED)

Contraindications

- Known drug allergy
- Pregnancy
 - Must consider risk
 - Mother
 - infant



Antiepileptic Drugs (AED)

Side Effects/Drug Interactions

- Depends on type of drug
 - Many different classes
 - Refer to Liley, pg 208-209
 - Table 13-3 – Side effects
 - Table 13-4 – Drug Interactions
 - Many drugs have therapeutic levels
 - Maintain levels
 - To decrease incidence of side effects
 - Table 13-5



Antiepileptic Drugs (AED)

Nursing Process

- Assessment for need
- LPN responsibilities
 - Promoting/monitoring therapeutic effects
 - Drug administration
 - Route
 - Average dose
 - Nursing care implications
 - Patient education



Antiepileptic Drugs (AED)

Nursing Process

- Implementation

- Take same time each day
- Take with meals if GI upset
- Give deep IM for parenteral agents
- Monitor IV site carefully
 - Ischemia & sloughing can result w/infiltration



Antiepileptic Drugs (AED)

Nursing Process

- Patient teaching
 - Medical alert tags should be worn
 - Do not discontinue abruptly
 - Report omissions to prescriber IMMEDIATELY
 - Avoid driving or engaging in other activities that require alertness
 - Avoid alcohol
 - Check with HCP before taking other meds



Antiepileptic Drugs (AED)

Nursing Process

- Observe for
 - Adverse effects
 - Contraindications
 - Drug interactions
- Evaluate effectiveness
 - Recognize therapeutic signs
 - Reporting/recording

Antiparkinsonian Agents

NAPNES Guidelines

Parkinson's Disease (cont'd)

- PD is a progressive condition
- Rapid swings in response to levodopa occur (“on-off phenomenon”)
 - PD worsens when too little dopamine is present
 - Dyskinesia occurs when too much is present



Dyskinesia

- Difficulty in performing voluntary movements
- Two common types
 - Chorea: irregular, spasmodic, involuntary movements of the limbs or facial muscles
 - Dystonia: abnormal muscle tone in any tissue

Antiparkinsonian Agents

- 3 types of drug therapy
 - Selective monoamine oxidase inhibitors (MAOIs)
 - Dopaminergics
 - Anticholinergics

Drug Therapy for PD

- Aimed at increasing levels of dopamine as long as there are functioning nerve terminals remaining
- Antagonizes or blocks the effects of ACh
- Slows the progression of the disease

Antiparkinsonian Agents

MAOIs

- Used in conjunction with dopaminergic drugs
 - Decreases amount of dopaminergic drug needed
- Action
 - Blocks the enzyme MAO-B
 - 70% of all MAO in the brain
 - May decrease destruction of the *substantia nigra*
 - Dopamine is not catabolized or destroyed
 - Increased dopamine levels

Antiparkinsonian Agents

MAOIs

- Example
 - Selegiline (Eldepryl)
 - Selegiline (Zelapar) – dissolvable tablet*
 - Rasagiline (Azilect) – new in 2006-07
- Indications
 - Treatment of Parkinson's disease
 - Adjunct with levodopa
- Contraindications
 - Current use with opioids (ie, meperidine)
 - Serotonin syndrome

*Absorption is higher – so doses are lower

Antiparkinsonian Agents

MAOIs

- Selegiline is a newer, potent, irreversible MAOI that selectively inhibits MAO-B
- Does not elicit the “cheese effect” of the nonselective MAOIs used to treat depression

Antiparkinsonian Agents

MAOIs

- Used in combination with levodopa or levodopa-carbidopa
- Used as an adjunctive when a patient's response to levodopa is fluctuating
- Allows the dose of levodopa to be decreased; delays the development of unresponsiveness to levodopa therapy

Antiparkinsonian Agents

MAOIs

- Nausea, abdominal pain
- Lightheadedness, dizziness
- Confusion
- Dry mouth
- Extraparamidal effects
- Others
 - See table 14-3 (Liley, pg 224)

Antiparkinsonian Agents

MAOIs

- Improvement in functional ability
- Decreased severity of symptoms
- Only 50% to 60% of patients show a positive response to therapy
- Prophylactic selegiline may delay the development of serious debilitating PD for 9 to 18 years

Antiparkinsonian Agents

Dopaminergic Agents

- Provide exogenous replacement of dopamine
 - 3 categories – goal is to increase dopamine levels
 - Indirect acting
 - Replacement
 - Direct acting
 - Reverses akinesias (complete or partial loss of muscle movement)

Antiparkinsonian Agents

Dopaminergic Agents

- Action
 - Replacement
 - Levodopa-carbidopa (Sinemet)
 - Provide exogenous dopamine
 - Indirect-acting
 - Amantadine (Symmetrel)
 - Causes release of dopamine from storage sites

Antiparkinsonian Agents

Dopaminergic Agents

- Action (cont.)
 - Direct-acting
 - Bromocriptine (Parlodel)
 - Pergolide (Permax)
 - Directly stimulate dopamine receptors

Antiparkinsonian Agents

Dopaminergic Agents

- COMT inhibitors
- New class of Antiparkinsonian drugs
 - Inhibit COMT (catechol-*O*-methyltransferase)
 - Enzyme responsible for levodopa breakdown
 - Examples
 - Tolcapone (Tasmar)
 - Entacapone (Comtan)

Antiparkinsonian Agents

Dopaminergic Agents

- Indications
 - Treatment of PD
 - Combination products
 - More efficient in increasing dopamine levels
- Contraindications
 - Allergy
 - History
 - Melanoma/undiagnosed skin condition
 - Narrow-angle glaucoma

Antiparkinsonian Agents

Dopaminergic Agents

- Side effects
 - Refer to Table 14-4, pg. 226 (Liley)
- Interactions
 - Hydantoins
 - Decrease effect of levodopa
 - Haloperidol
 - Decrease effect of levodopa
 - Nonselective MAOI
 - Can lead to hypertensive crisis
 - Vitamin B6
 - May reverse effect of levodopa

Antiparkinsonian Agents

Anticholinergic Agents

- Blocks the effects of acetylcholine
- Useful in treating
 - Muscle tremors and rigidity
 - Caused by excessive cholinergic activity
 - Due to lack of normal dopamine balance
 - First agents with many side effects
 - Dry mouth, urinary retention, blurred vision
 - Can be excessive
 - Newer agents
 - Synthetic
 - Less side effects

Antiparkinsonian Agents

Anticholinergic Agents

- Examples – refer to pg. 229 (Liley)
 - Benztropine mesylate (Cogentin)
 - PO: 0.5 – 6 mg/day (1 -4 mg BID)
 - Trihexyphenidyl (Artane)
 - PO: 6 – 10 mg/day (divided TID)
- Action
 - Block acetylcholine
 - Cogwheel rigidity
 - Result of acetylcholine accumulation

Antiparkinsonian Agents

Anticholinergic Agents

- Indications
 - Decrease salivation
 - Relax smooth muscles
 - Reduces muscle rigidity and akinesia
 - Useful in treatment of extrapyramidal reactions
 - Seen in patients treated with certain antipsychotic agents

Antiparkinsonian Agents

Anticholinergic Agents

- **Contraindications**
 - Drug allergy
 - GI or bladder outlet obstruction
 - Myasthenia gravis
- **Side effects**
 - drowsiness, confusion, hallucinations
 - Constipation, n/v
 - Urinary retention, pain on urination
 - Blurred vision, mydriasis, photophobia, dry skin

Antiparkinsonian Agents

Anticholinergic Agents

- Interactions
 - Enhanced CNS depressant effects
 - ETOH, CNS depressants
 - Amantadine
 - Phenothiazines
 - Tricyclic antidepressants
 - Antihistamines
 - Antacids
 - Alter gastric pH
 - Reduce absorption – decrease effect

Nursing Implications

- Perform a thorough assessment, nursing history, and medication history
- Include questions about the patient's:
 - CNS
 - GI and GU tracts
 - Psychologic and emotional status

Nursing Implications

- Assess for signs and symptoms of PD
 - Masklike expression
 - Speech problems
 - Dysphagia
 - Rigidity of arms, legs, and neck
- Assess for conditions that may be contraindications

Nursing Implications

- Administer drugs as directed by manufacturer
- Provide patient education regarding PD and the medication therapy
- Inform patient not to take other medications with PD agents unless he/she checks with physician

Nursing Implications

- When starting dopaminergic agents, assist patient with walking because of dizziness that may occur
- Oral doses should be given to minimize GI upset
- Encourage patient to force fluids to at least 2000 mL/day (unless contraindicated)

Nursing Implications

- Pyridoxine (vitamin B₆) in doses greater than 10 mg will reverse the effects of levodopa
- Teach patient to avoid foods high in vitamin B₆
- Taking levodopa with MAOIs may result in hypertensive crisis

Nursing Implications

- Patients should be told not to discontinue antiparkinsonian drugs suddenly
- Teach patients about what therapeutic and side/adverse effects to expect with antiparkinsonian drug therapy

Nursing Implications

- Levodopa preparations may darken the patient's urine and sweat
- Therapeutic effects of COMT inhibitors may be noticed within a few days
 - may take weeks with other agents

Nursing Implications

- Monitor for response to drug therapy
 - Improved sense of well-being and mental status
 - Increased appetite
 - Increased ability to perform ADLs, to concentrate, and to think clearly
 - Less intense parkinsonian manifestations, such as less tremor, shuffling gait, muscle rigidity, and involuntary movements