MEDAVIE HealthEd ÉduSanté

Neurology Pharmacology

Primary Care Paramedicine

Module: 13

Section: 09a

Antianxiety, Sedative, and Hypnotic Medications

- Sedation
  - Drugs given to counteract the anxiety before an invasive procedure
  - Hypnosis
  - Benzodiazepines, barbiturates, opioid agonists, and nonbarbiturate hypnotics

Antianxiety, Sedative, and Hypnotic Medications

- Benzodiazepines
  - Sedatives most commonly used to prepare patients for invasive procedures.
  - Believed to affect the inhibitory neurotransmitter gamma-aminobutyrate acid (GABA) in the brain
  - Cause brain activity to slow
  - Midazolam
  - Diazepam

Antianxiety, Sedative, and Hypnotic Medications

- Barbiturates
  - Believed to work similar to benzodiazepines
  - Thiopental
- Nonbarbiturate hypnotics
  - Have comparatively fewer side effects
  - Etomidate
  - Propofol

Anticonvulsants

- Seizure
  - State of neurologic hyperactivity
  - Active seizure
- Mechanism of anticonvulsants
  - Believed to work by inhibiting the influx of sodium into cells
  - Decrease the cell's ability to depolarize and propagate the seizures

CNS Stimulants

- Mechanisms of action
  - Increasing excitatory neurotransmitters
  - Decreasing inhibitory neurotransmitters
- Amphetamines
  - Increase the release of dopamine and norepinephrine to increase wakefulness and awareness
  - Increase tachycardia and hypertension and can cause seizures and psychosis

Psychotherapeutic Medications

- Block dopamine receptors in the brain
  - Patients may occasionally have ill effects from their use or overuse.
  - Schizophrenia
  - Side effects
  - Extrapyramidal symptoms

Psychotherapeutic Medications

- Depression
  - Common disorder
    - Selective serotonin reuptake inhibitors (SSRI)
    - Monoamine oxidase inhibitors (MOAI)
    - Tricyclic antidepressants (TCA)

Medications for Specific CNS and PNS Dysfunctions

- CNS agents
  - Class of drugs that produce physiologic and psychological effects through a variety of mechanisms
    - Specific agents
    - Nonspecific agents
    - Stimulants
    - Depressants

Medications Affecting the Parasympathetic Nervous System

- Stimulation of the parasympathetic nervous system
  - Pupil constriction and bronchoconstriction
  - Cardiac effects

Medications Affecting the Parasympathetic Nervous System

- Cholinergic medications
  - All preganglionic and postganglionic parasympathetic nerves use ACh as the neurotransmitter
    - Nicotinic receptors
    - Muscarinic receptors
  - Stimulate the cholinergic receptors
  - May act directly or indirectly on cholinergic receptors

Medications Affecting the Parasympathetic Nervous System

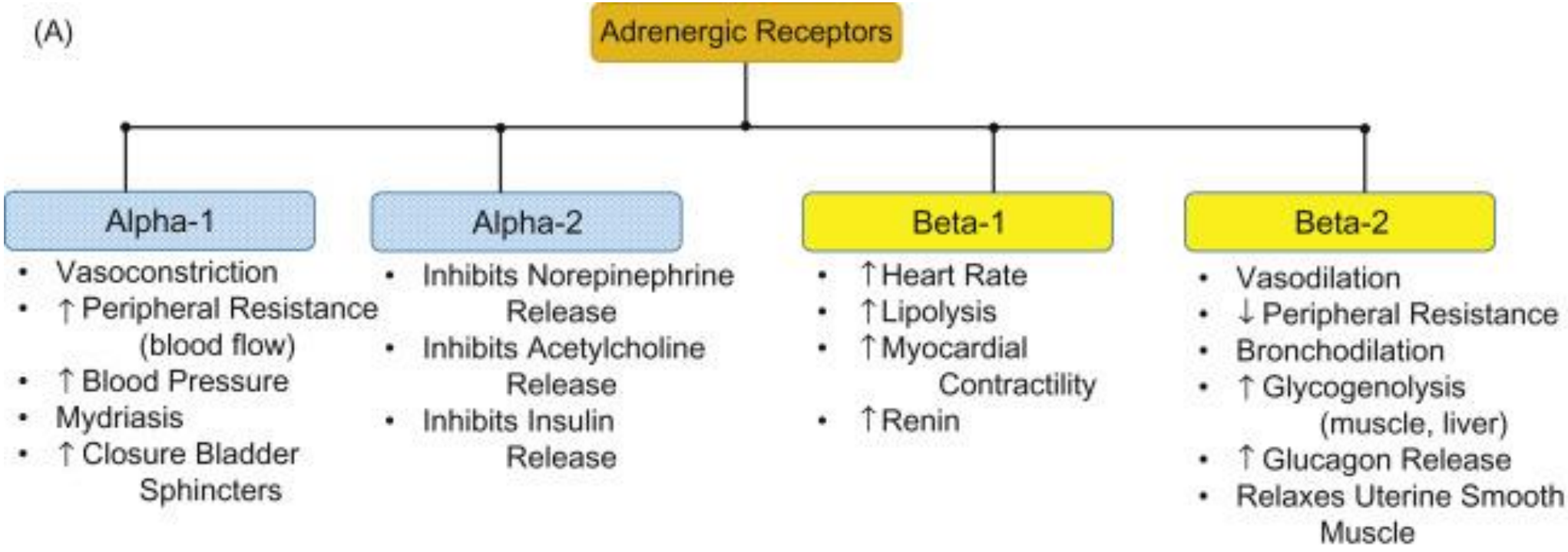
- Anticholinergic medications
  - Work in opposition to the parasympathetic nervous system by blocking receptors
    - Muscarinic cholinergic antagonists
    - Nicotinic cholinergic antagonists
    - Neuromuscular blocking agents
    - Depolarizing neuromuscular blocking agents
    - Nondepolarizing neuromuscular blocking agents

Medications Affecting the Parasympathetic Nervous System

- Stimulate or inhibit the sympathetic nervous system
  - Sympathomimetics
  - Sympatholytics
  - Adrenal medulla
  - Dopaminergic receptors

Medications Affecting the Parasympathetic Nervous System

(A)



(B)

Alpha-1	Alpha-2	Beta-1	Beta-2
NE > E	E > NE	E = NE	E >> NE
NE = Norepinephrine; E = Epinephrine			

Medications Affecting the Sympathetic Nervous System

- Prehospital setting
  - Often agonize the beta-1 receptors in an attempt to treat cardiac arrest and hypotension
  - Stimulation of the beta-2 receptors allows us to treat asthma and other diseases that cause excessive narrowing of the bronchioles.