

# cholinergic antagonists

*selectively block muscarinic receptors of the parasympathetic*

## Antimuscarinic agents

- Atropine
  - Eye — mydriasis, unresponsiveness to light and cycloplegia (inability to focus for near vision)  
• used in eye examination
  - GI — reduce motility of GIT, used as antispasmodic
  - urinary system — reduce hypermotility of the urinary bladder  
used in enuresis among children
  - cardiovascular —
    - block vagus nerve
    - increasing heart rate
    - Useful in bradycardia after acute Myocardial infraction
  - secretions — blocks the salivary glands (dry mouth), sweat and lacrimal glands
  - respiratory — (antisecretory) to block secretion in the upper and lower respiratory tracts
- scopolamine — prevention of motion sickness
- Ipratropium and tiotropium —
  - inhalation
  - bronchodilators for maintenance treatment of bronchospasm with chronic obstructive pulmonary disease (chronic bronchitis and emphysema)
- Tropicamide and cyclopentolate —
  - used as ophthalmic solutions for mydriasis and cycloplegia
  - duration of action shorter than atropine

*for 6 hours*

*Lo for 24 hours*

*block of the nicotinic receptors of the sympathetic and parasympathetic*

## Ganglionic blockers

- Mecamylamine —
  - competitive
  - used to lower blood pressure in emergency situations

*block cholinergic transmission between motor nerve ending and the nicotinic receptors on the neuromuscular endplate of skeletal muscle*

## Neuromuscular blockers

- Agonist (depolarizing)
  - structural analogs of ACh
  - act as: Antagonist (Nondepolarizing competitive blockers)
- Antagonist (nondepolarizing)
  - given during surgery to produce muscle relaxation
  - injected IV because uptake via oral absorption is minimal

- **Nondepolarizing** :- \* prevent the binding of ACh  
\* Prevent depolarization of the muscle cell membrane and inhibit muscular contraction  
\* used as adjuvant in anaesthesia during surgery to relax skeletal muscle  
\* used to facilitate orthopaedic surgery  
\* **Pancuronium**, **Atracurium**, **Cisatracurium**  
→ action can overcome by :- administration of cholinesterase inhibitors as: **neostigmine**, **Pyridostigmine**, **edrophonium**

- **Depolarizing** :- \* **Succinylcholine** [only depolarizing muscle relaxant]  
\* Works by depolarizing the plasma membrane of the muscle (similar action of ACh)  
\* more resistant to degradation by AChE  
\* more depolarize the muscle fibers cause flaccid paralysis  
→ Uses :- 1- when rapid endotracheal intubation is required the induction of anaesthesia  
2- during electroconvulsive shock treatment

والصعب بالصبر الجميل يمين