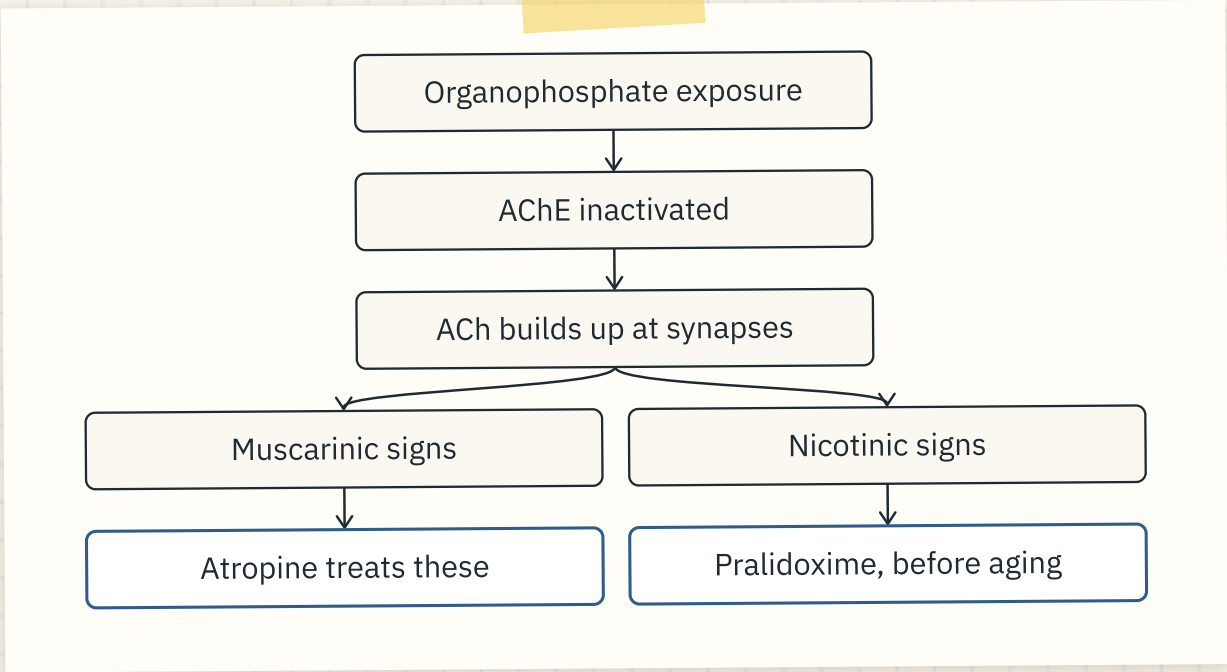
Organophosphate poisoning

Muscarinic vs nicotinic signs; atropine and pralidoxime



Step by step

1. Organophosphates inactivate acetylcholinesterase, so acetylcholine floods every receptor type.
2. Sort the signs: muscarinic, nicotinic or central.
3. Atropine treats the muscarinic signs; pralidoxime treats the weakness, before the enzyme ages.

MECHANISM

Organophosphate → AChE inactivated → ACh excess

muscarinic + nicotinic + central overstimulation

Type	Signs	Antidote
Muscarinic	D U M B B E L S, sweating	Atropine
Nicotinic (NMJ)	Fasciculations, weakness, paralysis	Pralidoxime
Nicotinic (ganglia)	Fast pulse, high blood pressure possible	Not covered by atropine
Central	Confusion, seizures, coma	Benzodiazepine for seizures

Signs and antidotes

Rule of thumb

D U M B B E L S = muscarinic half only

Atropine: secretions, airways, heart rate

Pralidoxime: weakness, before aging

Exam traps

- D U M B B E L S omits nicotinic and central effects.
- A fast pulse does not exclude this poisoning.
- Atropine does not treat nicotinic weakness.
- Pralidoxime only works before the enzyme ages.

Organophosphate poisoning: muscarinic vs nicotinic signs

Video, written lesson, practice question and sources: medservatory.com/usmle-step-1/pharmacology-principles-autonomic/cholinergic-toxicity-organophosphates-atropine-pralidoxime

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