

ESSAY - 9



2. A 60-year-old farmer is brought in unconscious state to the Emergency Department. On examination, he was drowsy, with bronchorrhea, hypersalivation and miosis. A distinct garlic odour was smelled. (1+2+4+4+4 = 15)
- a. What is the most probable diagnosis
 - b. What are the etiological agents responsible for such a condition
 - c. What is the pathogenesis of this condition, with mechanism
 - d. Describe the clinical features of this condition
- Discuss management of this condition



What is the most probable diagnosis ? (1 mark)



- Cholinergic Toxidrome

Possibly Organophosphate poisoning



What are the etiological agents responsible for such a condition? (2 marks)



- Insecticides

Di-ethyl compounds - Chlorpyrifos, Diazinon, Parathion

Di-methyl compounds - Dimethoate, Malathion, Fenthion

- Nerve agents - Tabun, Sarin, Soman



What is the pathogenesis of this condition with mechanism ? (4 marks)



- Absorbed through skin, conjunctiva, oral mucosa, GI tract, Respiratory tract
- Acetyl cholinesterase inhibitors
- OP-Acetyl cholinesterase complex - Inactivation of the enzyme
- Accumulation of acetylcholine at cholinergic synapses
- Muscarinic and nicotinic effects, PNS & CNS manifestations



- Reversible

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Irreversible

Reactivation (spontaneous hydrolysis)

Aging (Dealkylation of OP)

- Aging - important determinant of toxicity

Shorter for Dimethyl compounds compared to Diethyl compounds

Describe the clinical features of this condition ? (4 marks)



- Acute cholinergic phase
- Intermediate syndrome
- Delayed polyneuropathy



ACUTE CHOLINERGIC PHASE

- Starts within minutes. Lasts for 24-72 hours
- SLUDGE BBB
- Miosis
- CNS manifestations
- Fasciculations, muscle weakness



Salivation

Lacrimation

Urination

Defecation

GI upset

Emesis



Bradycardia

Bronchospasm

Bronchorrea



i**10.14 Cholinergic features in poisoning***

	Muscarinic	Nicotinic
Respiratory	Bronchorrhoea, bronchoconstriction	Reduced ventilation
Circulation	Bradycardia, hypotension	Tachycardia, hypertension
Higher mental function	Anxiety, delirium, psychosis	
Muscle	—	Fasciculation, paralysis
Temperature	Fever	—
Eyes	Diplopia, miosis, lacrimation	Mydriasis
Abdomen	Vomiting, profuse diarrhoea	—
Mouth	Salivation	—
Skin	Sweating	—
Complications	Coma, seizures, respiratory depression	

*Both muscarinic and nicotinic features occur in OP poisoning. Nicotinic features occur in nicotine poisoning and Black Widow spider bites. Cholinergic features are sometimes seen with some mushrooms.



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COMPLICATIONS

- Coma
- Seizures
- Respiratory failure
- Cardiac manifestations - Heart block, QT prolongation



INTERMEDIATE SYNDROME



- Seen in 20% of cases
- Develops 1-4 days (24-96 hours) after exposure
- Due to recirculation of lipid soluble organophosphate compound into blood
- Receptor dysfunction at the neuromuscular junction
- Neurologic manifestations



- Neck flexion weakness
- Decreased Deep Tendon Reflexes
- Cranial nerve abnormalities
- Proximal muscle weakness
- Respiratory failure

DELAYED POLYNEUROPATHY

- Develops 2-3 weeks after exposure (OPIDN)
- Inhibition of Neuropathy Target Esterase (NTE)
- Symmetrical polyneuropathy
- Preferentially affects long myelinated neurons
- Flaccid paralysis of lower limbs
- Foot drop/Wrist drop



Describe the management of this condition ? (4 marks)



DIAGNOSIS



- Pungent garlic like odor
- Toxicological analysis in blood, gastric secretions, urine
- RBC acetylcholinesterase, Plasma acetylcholinesterase



TREATMENT

- Assess Airway, Breathing, Circulation
- Oxygen
- Obtain iv access. Blood routines, RFT, LFT, Electrolytes
- Surface decontamination - Remove clothes, wash with soap and water
- GI decontamination - Gastric lavage only if its within 1-2 hour
- Activated charcoal (1 gram/kg) maximum 50 g. ? Controversial
- Induction of emesis is contraindicated

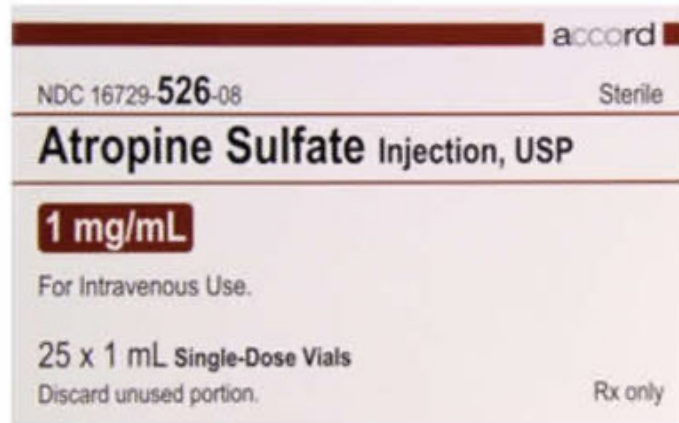


ANTIDOTE - Atropine

- Competes with acetylcholine at muscarinic receptors

Prevents cholinergic activation

- No effect on nicotinic receptors



- 1.8 mg iv bolus

Doubled every 5-10 minutes until atropinization

- Close monitoring of vitals

- Atropinization Targets

Chest clear on auscultation with no wheeze

Dry axillae

Heart rate > 80 beats/min

Pupils no longer pinpoint

Systolic BP > 90 mm Hg



- Once target achieved

Atropine maintenance infusion (10% of total atropinization dose every hour)

- Taper and stop Day 2-5
- Alternative option : Glycopyrrolate (does not cross BBB)

Pralidoxime

- Cholinesterase reactivating agents
- Counters both muscarinic and nicotinic effects
- Dose : 30 mg/kg (maximum 2 g) iv slowly over 30 minutes
followed by infusion of 8mg/kg/hour
- Continued till atropine is continued (2-5 days)

ESSAY - 10



II) A 60 years patient is brought to the casualty with history of having found lying unconscious with sweating. O/e He has bradycardia, frothing from the mouth, constricted pupils and fasciculations. On the way to the hospital he had repeated seizures. (1+2+4+4+4)

1. What is the most probable diagnosis?
2. Name 4 causes for a constricted pupil?
3. What are the complications expected in this patient?
4. How will you investigate this patient?
5. How will you manage this patient?



Name 4 causes of a constricted pupil ? (2 marks)



- Organophosphate poisoning
- Opioids
- Horner's syndrome
- Pontine hemorrhage
- Iridocyclitis
- Clonidine
- Antipsychotics



ESSAY - 11



2. 60-year-old male farmer brought to the Emergency after intake of unknown substance . On arrival , he was sweating , salivation , urinary , faecal incontinence and constricted pupil . (1+2+2+5+5=15)
- a) What is your probable diagnosis
 - b) Describe the mechanism of action of the toxin ?
 - c) Discuss regarding the other symptoms and signs ?
 - d) Discuss regarding treatment for the condition ?
 - e) Discuss regarding intermediete syndrome



ESSAY - 12



III. A 23 year old patient was brought to casualty in a semi-conscious state. On examination the patient has sweating, bradycardia, pin point pupils, fasciculations and coarse crepitations.

1. What is the most likely diagnosis?
 2. Discuss the patho-physiology of this condition
 3. What are the long term and short term complications that can occur
 4. How will you manage this patient?
- (2+4+3+6 = 15 marks)



ESSAY - 13



Long essay (1 X 12 = 12 marks)

- 1) A 40-year-old male from a village brought to the Emergency Department in drowsy state following seizure. On evaluation pupils were pin point, PR was 40/mt and breath smells of kerosene like compound. His saturation was 50% with bilateral crepitations on chest auscultation. Answer the following :-

2+4+4+2 = 12 Marks

- What is the probable diagnosis?
- Discuss the pathophysiology and clinical features.
- How will you manage the above patient?
- Enumerate the differential diagnosis for pinpoint pupils

