

Snake poison

Types of snakes

➤ Poisonous

➤ nonpoisonous

Poisonous snakes

Elapids (neurotoxin)

- King cobra, cobra
- Common krait, banded krait
- Corals

Vipers (vasculotoxin)

- **Pit viper**
 - Rattle snake, bamboo snake
- **pit less vipers**
 - Russel viper, saw scaled

Sea snakes (myotoxin)

Snakes in Pakistan

- 72 snake species prevalent in Pakistan
- 14 marine and 12 terrestrial snake species are poisonous
- Common snakes
 - common krait
 - Sindh krait
 - Northern Punjab krait
 - Indian cobra
 - Brown cobra
 - Russell's snake
 - Saw scaled
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Toxins and their activities

- Neurotoxin
- Cholinesterase
 - Presynaptic
 - Postsynaptic
- Anticholinesterase
- Myotoxin
- Hemostatic system toxin
- Hemorrhagins
- Nephrotoxin
- Cardiotoxin
- necrotoxin

Toxins in elapid snake

➤ Presynaptic

damage terminal axon at the neuromuscular junction

this type of paralysis not reversed by antivenom therapy

➤ Postsynaptic

bind to ach receptors at the muscle end plate, so paralysis may be reversed by antivenom therapy

➤ Coagulopathy

procoagulant and anti coagulant



Elapid snake bite

➤ Neurotoxic flaccid paralysis

➤ Myolysis

➤ Coagulopathy

➤ Renal damage

➤ Local tissue injury

➤ Venom spit ophthalmia

Clinical feature

Mild local symptoms

- Slight burning
- Lethargy
- Weakness of legs
- Difficulty in speaking/swallowing
- Ptosis
- Necrosis of skin and tissues
- Death due to respiratory failure

Clinical feature

- Muscular weakness

- Paralysis of face, throat and respiration

- Krait venom cause only muscular paralysis

- Neurotoxin of cobra cause both convulsion and paralysis

Viper snake

- Toxin

- Enzymes that clot fibrinogen
- Enzymes that degrade fibrinogen
 - Plasminogen activator
 - Prothombin activator
 - Factor v activator
 - Factor x activator
 - Enzyme which degrade plasma serine proteinase inhibitor
(antithrombin III, α_1 -proteinase)

Vasulotoxic venom

- Destruction of cell wall
- Coagulation disorder
- Destruction of endothelium of blood vessel
- Lysis of red cell
- Oozing of hemolytic blood
- Cellulitis
- Hemorrhage from external orifices
- Convulsion due to hemorrhage

Viper bite

- Severe local symptoms
- Intense local pain ,swelling, ecchymosis
- Oozing of hemolytic blood
- Haemoglobinuric nephritis
- Bleeding from gums ,hemoptysis
- Myolysis
- Renal damage
- Cardiac toxicity
- Anaphylactic reaction

Sea snake

- Myotoxic
- Neurotoxic
- Nephrotoxic
- hemolysis

Toxins

- Acetylcholinesterase
- Hyaluronidase
- Leucine amino peptidase
- Phosphodiesterase
- phospholipase

Clinical features

- Painless bites or minimal discomfort
- 1-4 fang marks
- muscle destruction
- Flaccid paralysis
- Dysphagia
- Trismus
- Ptosis
- Fasciculation
- Seizures
- Death due to respiratory
paralysis.rhabdomyolysis,renal failure

Diagnosis of snake bite

- History
- Physical examination
 - Bite marks

Following point should be noted

- precise date and time of incident
- geographic location at the time of incident
- description of snake
- what first aid, if any was used
- List of symptoms observed by patient

Physical examination

- Vital signs should be measured
- Check the bite or sting site for evidence of bite mark
- Regional lymph nodes should be palpated
- Examine for specific venom effect

diagnosis

➤ Snake venom detection kit(not available in Pakistan)

➤ Coagulation studies

- whole blood clotting time
- Prothombin time
- INR and APTT(ACTIVATED PARTIAL THROMBOPLATIN TIME)
- fibrinogen, fibrin degradation product
- complete picture/platelet count

➤ Plasma serum electrolyte

➤ Renal function

- k level
- creatinine and urea level

➤ CK(CREATINIE KINASE)

➤ Urine

- blood
- microscopy

Management

Field management

- Alleviate anxiety
- Look for evidence of snake bite
- Don't let the patient move
- Hold bitten part at or below the level of heart
- Pressure immobilization

OTHER FIRST AID METHODS

- tourniquets
- cutting and suction
- application of chemicals
- use of cryotherapy or electric shock
- **No value or potentially harmful**

Anti venom

➤ Specific antidote to venom

monovalent

(against single specie of animal)

polyvalent

(against variety of species)

➤ Three major types of anti venoms

whole IgG

F(ab)₂ known as croFab

Fab(require continous infusion)

Complication of antivenom

➤ Anaphylaxis

➤ Rash

➤ Febrile reactions

➤ Delayed reactions

➤ serum sickness

Non anti venom treatment

➤ Anticholinesterase

Edrophonium and neostigmine

➤ Tetanus protection

➤ Fasciotomy

(compartment syndrome)

➤ Inj epinephrine

(anaphylaxis)

➤ In case of allergic reaction

- anti histamine
- corticosteroids