

Snakes



Objective

- ▣ To identify snakes
- ▣ Recognize sign symptoms
- ▣ Diagnosis
- ▣ First aid
- ▣ Treatment
- ▣ PM appearance
- ▣ MLI

More than 3500 species, but 250 poisonous

In India 216 species but 52 poisonous

About 15000-20000 people die every year out of 2
lacs snake bite cases

The big four-Common Cobra

Common Krait

Russel's Viper

Saw scaled Viper

50% Snake bites by venomous species are "Dry
Bites" ~ No venom injected

Snakes

Poisonous

Non-poisonous

■ Colubridae (oviparous)

Elapidae (Land snakes)
*Cobra, King cobra,
Krait, Banded krait,
mambas, copperhead*

■ Viperidae (viviparous)

*Russel's viper, Saw-scaled
viper, Pit vipers, Rattle
snakes, Adders*

Crotalidae

*Rattlesnakes, pigmy
rattlesnakes, copperheads,
cottonmouths*

Hydrophidae (Sea snakes)



Identification of snakes

1. Look at the tail:
 1. If compressed and flat – Sea snake
 2. If cylindrical & non-compressed – could be venomous or non-venomous
2. Look at the belly scales
 1. Small, do not cover the entire breadth of the belly – non-venomous
 2. Large & cover entire breadth of belly – could be venomous or non-venomous
3. Look at the head scales
 1. Small head scales – Viper (pit/no pit, triangular head)
 2. Large head scales like shields – could be venomous or non-venomous



Identification of Snakes

4. Look at the labial scales

1. 3rd supra-labial largest and touches scales of eye and nostril
 1. Neck has hood and markings – Cobra
 2. Coral spots on belly – Coral snake
2. Only 4 infralabials, 4th is the largest – Krait (dorsal central scales are hexagonal & enlarged, subcaudates are not divided)
3. None of the above – Non-venomous

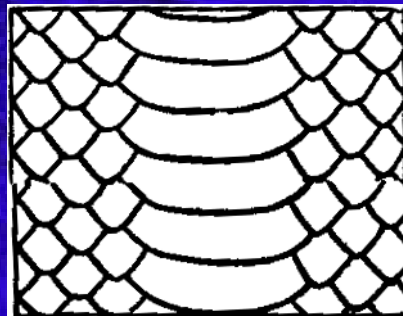
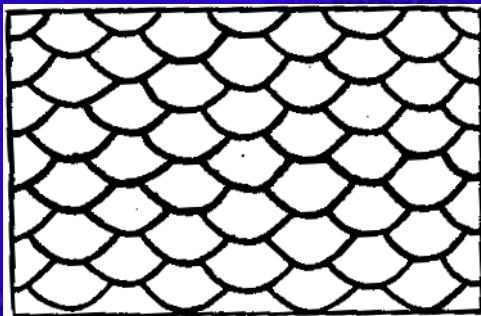
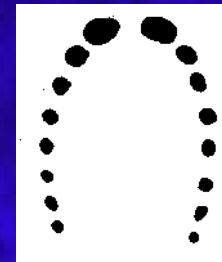
Non-poisonous snakes

Belly scales incomplete

No fangs, several small teeth

No hood, no flat tail, no pits

Bite mark : semicircular set





Viper:

Short & Stout

Diamond-shaped head

Prominent neck

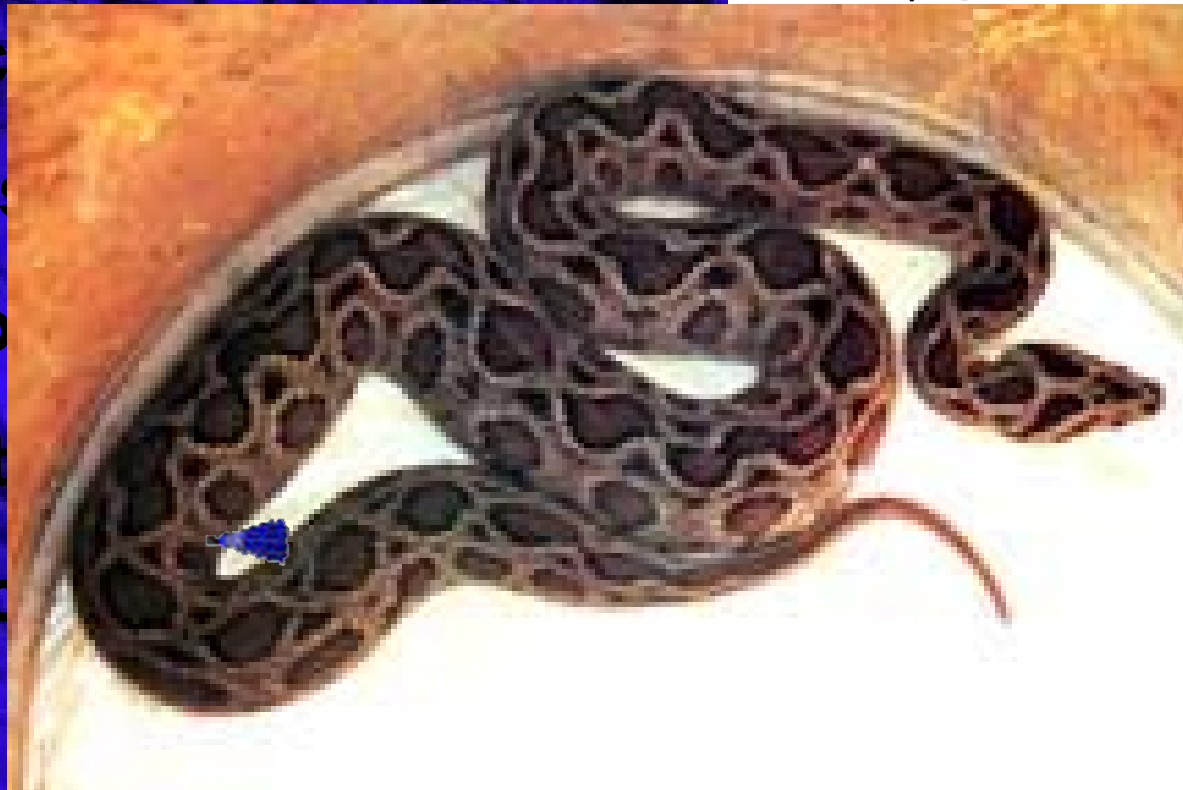
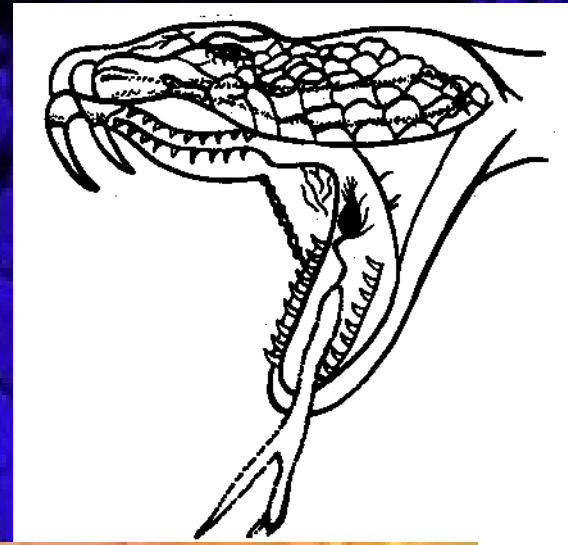
Small scales

Pupils : s

Fangs lo

Give birt

Haemoto



Snake venom:

Clear, yellowish, water-soluble

Proteolytic enzymes

Phosphatidases

Neurotoxins

Erepsin

Cholinesterase

Hyaluronidase

Ribonuclease

Ophi-oxidase



Snake Venom

- ▣ **Source:** Toxic saliva secreted by modified parotid gland of a venomous snake
- ▣ **Physical appearance:** Clear, amber coloured fluid when fresh
- ▣ **Nature:**
 - Neurotoxic: Elapid snakes
 - Hemotoxic: Viperid snakes
 - Myotoxic: Hydrophid snakes

Fatal dose:

12 mg cobra venom

15 mg viper venom

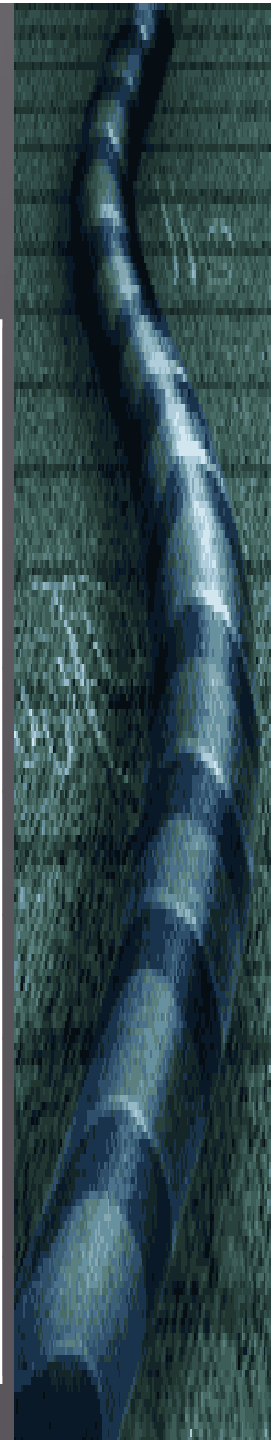
Fatal period:

Colubrine: 20 min to 6 hours

Viperine: 2-4 days

Yield and LD

Species	Approximate yield of dry venom (mg)	i.v. LD (mg/kg)
Common Cobra	170 – 325	0.4
Common Krait	8 – 20	0.09
Russell's Viper	130 – 250	0.08
Saw-scaled Viper	20 – 35	2.3
Pit Viper	40 – 60	6.2



Prevention/ Safety

- ▣ **WATCH YOUR STEP!!!**
- ▣ Do not touch dead snakes with bare hands. A detached snake head can still inflict a bite!
- ▣ Most snakes will only bite when startled, provoked, threatened, or cornered
- ▣ When working in wooded areas:
 - Where sturdy over the ankle boots, durable pants, and use gloves to handle refuse
 - Tread heavily, snakes will hear you and flee
- ▣ Direct Encounters: Back away, keep your eyes on the snake

Prevention/ Safety

- ▣ Do not blindly reach into wood piles, flip over rocks, etc.
- ▣ Avoid snakes appearing to be dead. They often use this as a defense mechanism
- ▣ **Contractors engaging in activities where snakes live should provide training, have a plan in case of snake bite to include locating nearest hospital and if they are experienced in treating bites, should train employees on prevention, and outfit workers properly**

First Aid

- ▣ **SEEK MEDICAL ASSISTANCE IMMEDIATELY!!!!**
- ▣ Treat all bites as poisonous
- ▣ Keep person calm and as still as possible
- ▣ Remove all jewelry
- ▣ Wash wound with soap & water
- ▣ Apply suction device if person is more than an hour from treatment
- ▣ Immobilize limb below the heart
- ▣ Give 100% oxygen if available
- ▣ Perform CPR if necessary

Outmoded Treatments

- ❑ Do not administer pain medication or give food
- ❑ Tourniquets
- ❑ Cutting the wound open
- ❑ Sucking out venom by mouth
- ❑ Snake stones
- ❑ Application of any chemicals
- ❑ Use of electroshock therapy
- ❑ Often field treatments by untrained personnel result in damage to victim or by the person applying treatment

Anti-snake venom serum

(20ml I.V. may be repeated.

Desensitization)

**Polyvalent serum (for 4 common
Indian snakes)**

Antivenin (Cobra or Russel's viper)

Analgesics

Antibiotics

Inj. T.T.

Body warmth

Symptomatic treatment

Treatment of Snake bite

▣ First aid:

- Reassurance
- Warmth, rest, immobilization
- Non-sedating analgesic for pain (No aspirin)
- Tourniquet/Sutherland wrap
- Bite site first aid –
 - ▣ Wipe site and cover loosely with clean piece of cloth
 - ▣ Suction
 - if medical help > 1 hr away or if done within few mins of bite
 - Using parallel incisions through fang marks, 1 cm long and not more than 3 mm deep
 - Using commercial suction device

Early Clues of Severe Envenomation:

- ▣ Snake identified as a very dangerous one
- ▣ Rapid early extension of local swelling from the site of the bite
- ▣ Early tender enlargement of local lymph nodes, indicating spread of venom in the lymphatic system
- ▣ Early systemic symptoms:
 - collapse (hypotension, shock), nausea, vomiting, diarrhoea, severe headache, "heaviness" of the eyelids, inappropriate (pathological) drowsiness or early ptosis/ophthalmoplegia
- ▣ Early spontaneous systemic bleeding
- ▣ Passage of dark brown urine

Treatment of Snake bite

- ▣ Hospital measures:
 - Observation – at least for 24 hours
 - Check for and monitor:
 - ▣ Pulse. Resp. rate, BP, WBC count – hourly
 - ▣ Bl. urea, S. creatinine, Urine output
 - ▣ Vomiting, diarrhoea, bleeding
 - ▣ Local swelling and necrosis
 - ▣ ECG, blood gas analysis
 - Antivenin therapy

Treatment of Snake bite

- ▣ Hospital measures (cont.):
 - Other measures:
 - ▣ Clean bite site, no dressings
 - ▣ Leave blisters alone
 - ▣ Inj TT, Prophylactic antibiotic
 - ▣ Rehydration, etc.
 - Special measures:
 - ▣ Blood/FFP, Vasopressors, O₂
 - ▣ Neostigmine 0.5mg ½ hrly for neuro-paralysis after administration of Atropine 0.6mg i.v. to block muscarinic effects

Anti-venom Therapy

- ▣ Not administered as a routine – only given if envenomation is evident
- ▣ Avoid unnecessary delay
- ▣ Only PVASV available in India, effective against – common cobra, common krait, Russell's viper and saw scaled viper
- ▣ Procured from Haffkine Institute, Mumbai; CRI, Kasauli; Guindy Snake Park, Chennai and King's Institute, Delhi.
- ▣ Available as lyophilized powder of horse serum to be reconstructed before use.

Anti-venom Therapy (contd)

▣ Indications

(recommended if and when a patient with proven or suspected snake bite develops one or more of the following signs) :

■ **Systemic envenomation**

- ▣ Haemostatic abnormalities: spontaneous systemic bleeding, coagulopathy or thrombocytopenia
- ▣ Neurotoxic signs: ptosis, external ophthalmoplegia, paralysis etc.
- ▣ Cardiovascular abnormalities: hypotension, shock, cardiac arrhythmia, abnormal ECG
- ▣ Acute renal failure: oliguria/anuria, rising blood creatinine/ urea Haemoglobin-/myoglobin-uria - dark brown urine, other evidence of intravascular haemolysis or generalised rhabdomyolysis (muscle aches and pains, hyperkalaemia)

Anti-venom Therapy (contd)

▣ Indications (contd)

▪ **Local envenomation:**

- ▣ Local swelling involving more than half of the bitten limb (in the absence of a tourniquet)
- ▣ Swelling after bites on the digits (toes and especially fingers)
- ▣ Rapid extension of swelling (for example beyond the wrist or ankle within a few hours of bites on the hands or feet)
- ▣ Development of an enlarged tender lymph node draining the bitten limb

Anti-venom Therapy (contd)

▣ Dosage and administration:

- ▣ Local swelling, No systemic features: 20 – 50ml
- ▣ Swelling beyond bite site, mild systemic features: 50 – 100 ml
- ▣ Marked local/systemic features: 100 – 150 ml
- Added to 500 ml NS and given as i.v. infusion over 1 – 2 hours. Repeated if no improvement
- Local injection at bite site is NOT EFFECTIVE.

▣ Adverse effects:

- Anaphylaxis

Summary

- ▣ Watch your step in hazardous environment
- ▣ Wear protective clothing
- ▣ If a snake is encountered, leave it alone!
- ▣ In the event of a bite, seek medical assistance immediately

SNAKES!!!!!!