



ANIMAL POISONS

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HISTORY/ MYTHS



Cleopatra's Death



Rod of Caduceus V/s Asclepius



Caduceus



**Rod of
Asclepius**

OPHITOXAEemia

- Is poisoning by snake bite.
- In India > 300 species of snakes are there out of which only 52 are poisonous.
- In world, total number of snake bites/ year- about 5 million.
- Half of which constitute “dry bites”.
- In India about 15k- 20000 deaths occur / year due to snake bites.
- Snake bite is included in the list of “ Neglected Tropical Diseases” by WHO in 2017.

- Poisonous V/s Venomous
- Ophidiophobia / Ophiophobia
- Why snake bite has high incidence in India?
- Why is rate of death due to snake bites is high in spite of having anti snake venom/antidote?

INDIAN SNAKES

- ELAPIDAE

- King Cobra
- Common Cobra
- Common Krait
- Banded Krait

- HYDROPHIDAE

Sea snakes

- VIPERIDAE

- Russell's Viper
- Saw scaled Viper
- Pit Viper.

Non Venomous Snakes dangerous to Humans

- ?
- ?

BOAS



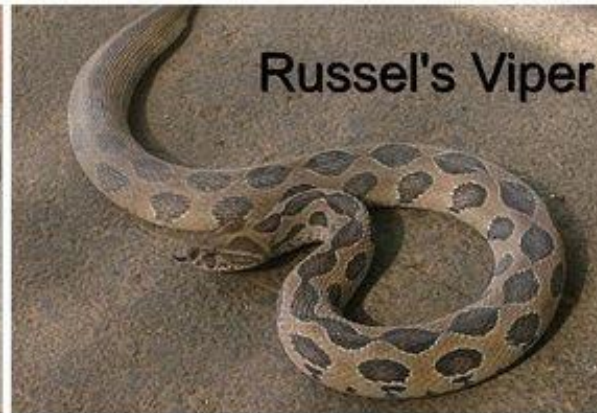
PYTHON



THE BIG FOUR



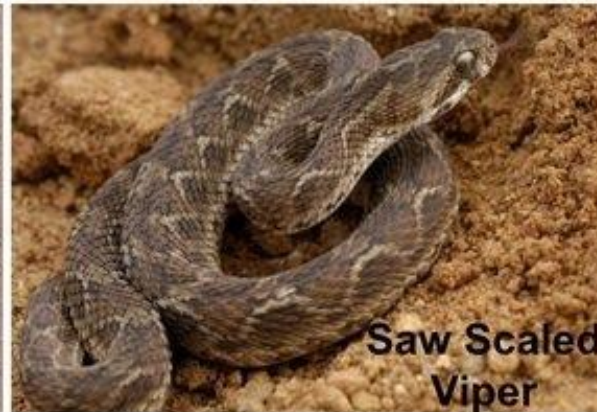
Common Krait



Russel's Viper



Common Cobra



Saw Scaled
Viper

How to differentiate venomous snake from non venomous snakes?

VENOMOUS

1. Belly scales large & cover entire breadth of belly.
2. Head scales small (vipers)
Head scales large:
 - a) Pit between eye & nostrils
Pit viper
 - b) Third SL touches the eye & nasal shields - Cobra, Coral
 - c) Only 4 IL, 4th being largest
– Krait
3. Fangs are hollow
4. Tail is compressed
5. Teeth – 2 long fangs

NON- VENOMOUS

1. Small do not cover the entire belly.
2. Head scales large
3. Short and solid or no fangs.
4. Not much compressed.
5. Several small teeth.

Poisonous Snake



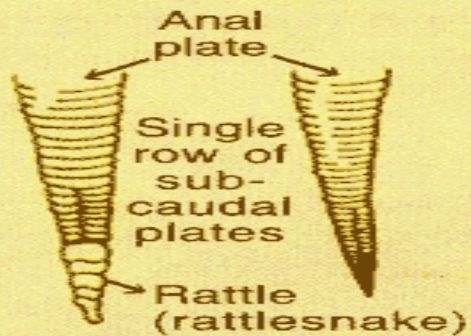
Triangle-shaped head



Elliptical pupil

Pit

Fangs



Anal plate

Single row of sub-caudal plates

Rattle (rattlesnake)

Non-Poisonous Snake

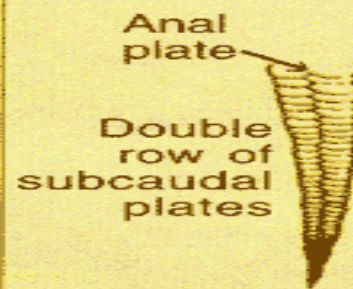


Rounded head



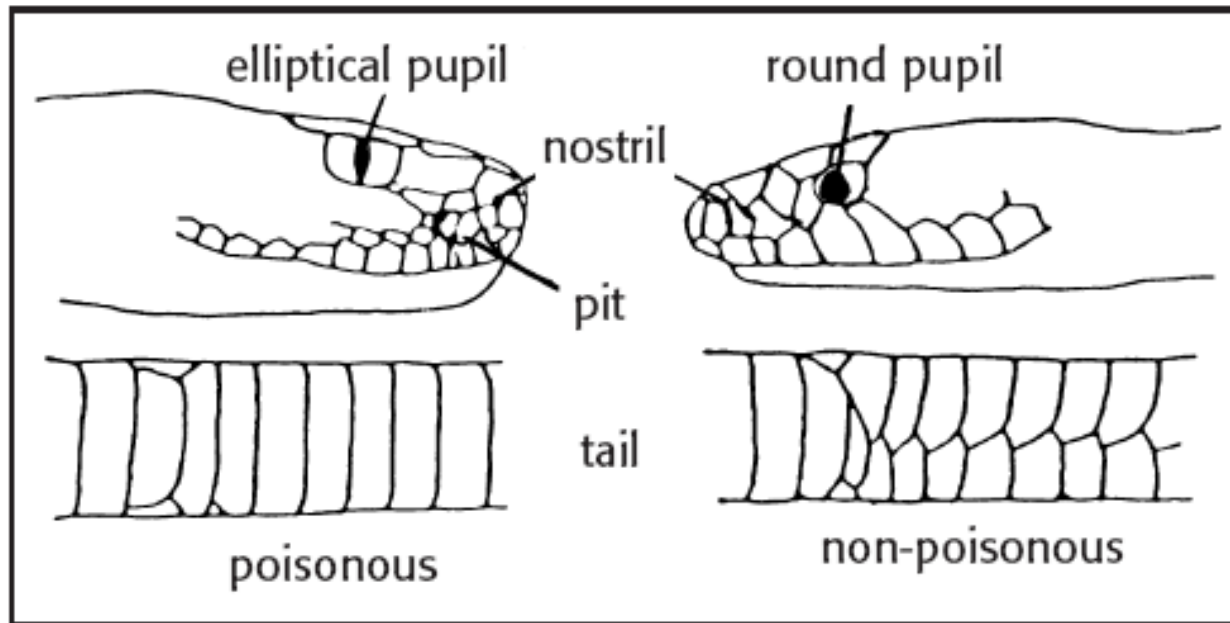
Round pupil

No fangs



Anal plate

Double row of subcaudal plates



Differentiating features

- Belly
- Head
- Head scales

Difference between Cobra & Viper



COBRA



VIPER

FEATURES	COBRA	VIPER
Head	Smaller and slender, covered with large scale	Larger, triangular and covered mostly with smaller scales
Pupils	Circular	Vertical, slit-like
Neck	Not prominent	Narrow prominent neck
Tail	Less tapering	more tapering
Fangs	Shorter and grooved	Longer and channelled
Other teeth	Present in the upper jaw	Absent
Reproduction	Oviparous, by laying eggs which hatch externally	Viviparous, gives birth to young ones. Eggs are hatched inside the body of the mother
Venom	Mostly neurotoxic	Mostly haemotoxic

Examples of snakebites

Venomous snake



Nonvenomous snake



COMMON COBRA

- ◉ Brown or black
- ◉ Hood
- ◉ Monocellated or binocellated
- ◉ 1.5 to 2 meters
- ◉ Belly scale- single up to genital pore
- ◉ Two grooved fangs in upper jaw
- ◉ White band at separation of hood and body
- ◉ Predominantly neurotoxic

BINOCELLATED



MONOCELLATED



VIPER

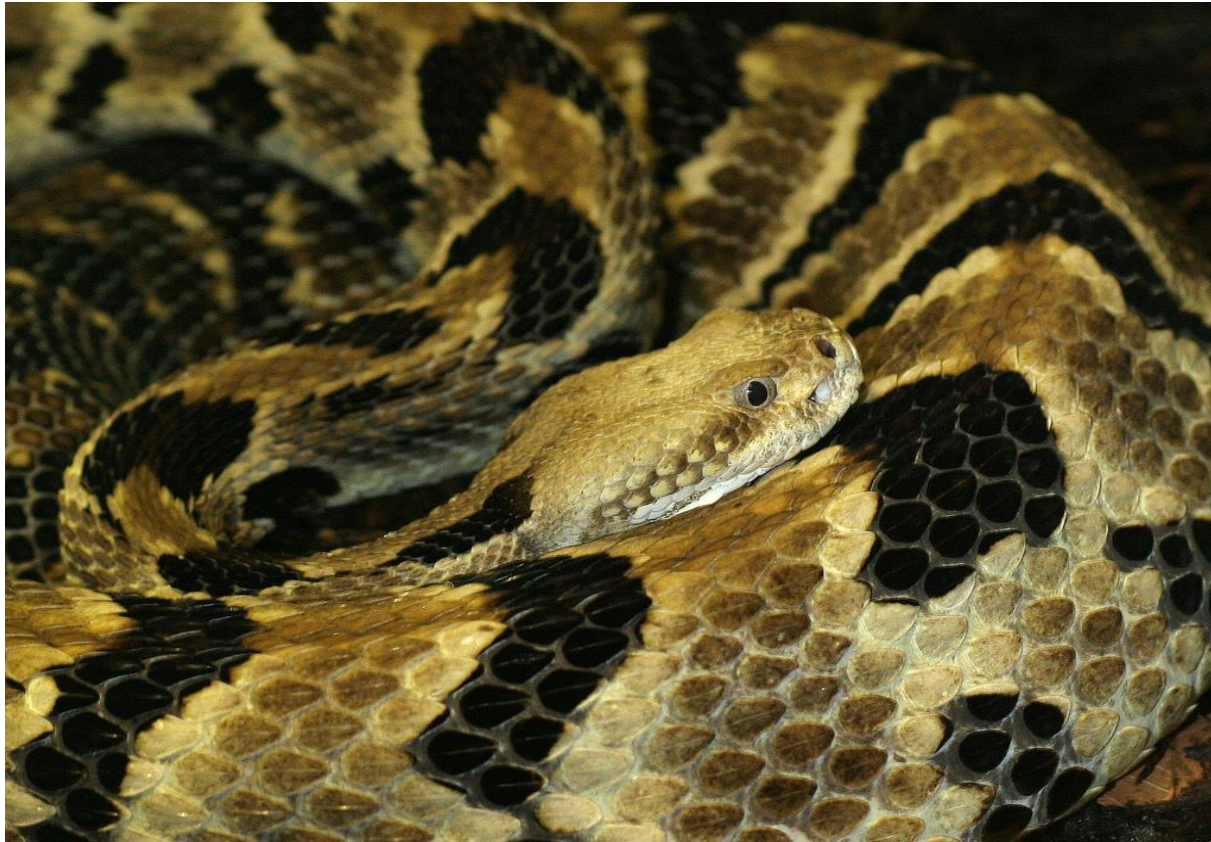
○ SAW SCALED

- I. 40-80 cms
- II. Triangular head
- III. Small Scales
- IV. Bird foot mark
- V. Dry & pointed scales
- VI. Rustling sound
- VII. All the vipers are haemotoxic

○ PIT VIPER

- I. Pit btw nostril and eye.
- II. Belly scales not divided
- III. Short tail
- IV. Tail scales divided

PIT VIPER



SAW SCALED VIPER



© John White

SAW SCALE PATTERN

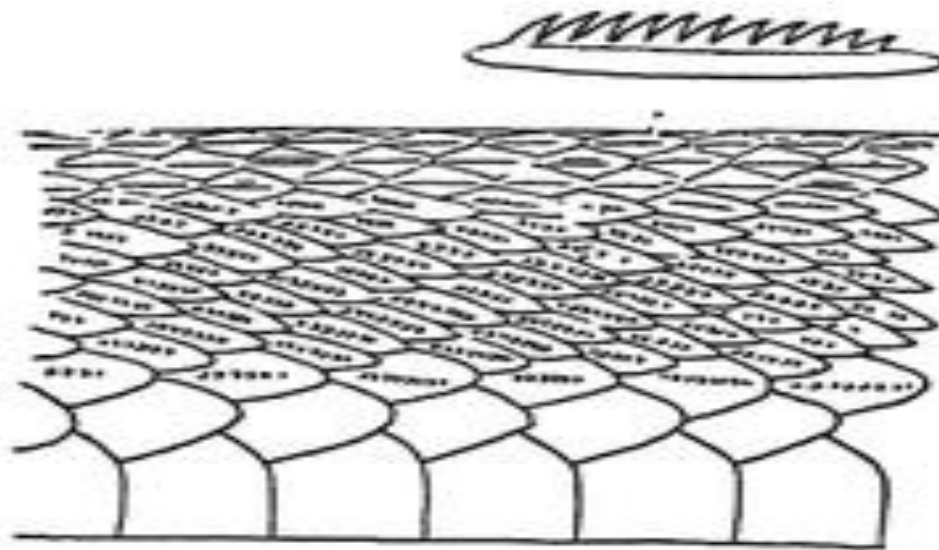


Fig. 124.—Scales of *Eolus carinata*.



RUSSELL'S VIPER

- 1- 1.5 mts
- Triangular head
- Small scales
- V mark on head
- Diamond or circle mark on back in three rows.
- Undivided scales
- Hissing sound
- Canalized fangs
- Vertical pupil
- Egg in pouch

RUSSELL'S VIPER



KRAIT

- COMMON KRAIT

- 1-1.5 meters
- Steel blue / black
- White bands
- Creamy white belly
- 4th Infra labial scale largest one.
- Hexagonal scales on back

- BANDED KRAIT

- 2 meters
- Black with yellow bands
- 4th IL scale largest
- Arrowhead like marking on head up to eyes.

BANDED KRAIT



COMMON KRAIT



FATAL DOSE

Russell's viper	:	20 mg	} of dried Venom
Cobra	:	15 mg	
Saw scaled viper	:	08 mg	
Krait	:	06 mg	

● FATAL PERIOD

Common Cobra	- 8 hours
Common Krait	- 18 hours
Russell's Viper	- 3 days
Saw Scaled Viper	- 5 days

Signs & Symptoms- NV

- 1) Fright
- 2) Slight pain
- 3) Edema
- 4) Oozing of blood
- 5) Itching
- 6) Tingling
- 7) Lodging of tooth

VENOMOUS BITES

- Fright- hypotension, feeble pulse, high RR.
- Semi consciousness with cold clammy skin.
- Gas gangrene
- Tetanus
- Psychological Shock
- Fang marks with or without teeth marks.

COBRA & KRAIT BITES

- Local symptoms start within 6-8 mins.
- Redness, swelling and pain are minimal.
- Sleepiness, intoxicating feel, drowsiness
- Malaise, nausea, vomiting
- **Weakness of muscles → paralysis of lower limbs → trunk → head**
- **Eyelids hang down → ptosis**
- Laboured respiration, coma & death.
- If recovery occurs- necrosis of bite site.

VIPERINE BITE

- Severe local reactions.
- Area becomes red, swollen & painful – cellulitis.
- Persistent Bleeding, bruising, blisters, Necrosis.
- Vomiting, giddiness, abdominal pain, sweating.
- DIC, Spontaneous bleeding.
- Dilated pupils, NR to light.
- **No paralysis seen.**
- Hypotension, circulatory collapse, death.

DIAGNOSIS

- 20 minute whole blood clotting test (20 WBCT)
- From the snake killed and brought.
- RIA, EIA, ELISA.
- Sample ?

MANAGEMENT- FIRST AID

- ✓ “CARRY” the patient to a safe and open environment.
- ✓ Keep the victim calm.
- ✓ Keep the affected area below the level of heart so as to reduce the blood flow.
- ✓ Remove if there is any ring, ornament, clothing, shoes, etc at bite site as the part may swell up.
- ✓ Immobilize the bitten limb with splint or sling.

SUTHERLAND WRAP

- A crepe bandage is tied on the bitten limb tightly, not as tight to occlude the peripheral pulses or that a finger cannot easily be slipped under its layers.
- So applied it exerts a pressure of 55 mm of Hg which only block lymphatics and superficial veins and not the arteries.
- Useful in Cobra, Krait and Sea snake bites.
- Harmful in Viperine bite.

REMEMBER R.I.G.H.T.

R- Reassure the patient as about 70% of snake bites are non venomous and about 50% are dry bites.

I- Immobilization

GH- Go to hospital immediately

T- Tell the doctor the specific signs of the victim.

PAV

In India, the mainstay of snake bites is the Polyvalent ASV which is effective against the Big Four: ***Common cobra, Common krait, Russell's viper and saw scaled viper***. No monovalent ASVs are available.

ASV should be administered only if there are sure signs of envenomation. Also, the doctor should be aware of the anaphylactic reactions commonly following its administration and should be fully prepared to handle those, if occur.

- ✓ Initial dosage should be 8-10 vials and it is same for both children and adults. Each vial is 10 ml of reconstituted ASV.
- ✓ Management dosage should be 5-10ml / kg body weight slow IV infusion over one hour and the patient then should be monitored for 2 hours.
- ✓ In case of anaphylactic reaction ASV should be stopped and anti histaminics and adrenaline should be administered.
- ✓ Useful when given within 4 hours, lesser value after 8 hours and doubtful after 24 hours.

Supportive treatment

- Cortisone, adrenaline, anti- histaminic.
- Broad spectrum-antibiotics, tetanus toxoid.
- Renal dialysis, peritoneal dialysis.

FOLLOW UP

- Monitor the patient for at least 24 hours from the incidence.
- Before 24 hours- The patient should be advised about the danger signs and to report back as soon as possible.
- After 24 hours - Explain the patient about the possibility of serum sickness for follow up after 5-10 days.

PM APPEARANCE

- ❖ Two fang marks, sometimes one the site of bite.
- ❖ Swollen, bluish with oozing of reddish fluid from bite punctures, s/o cellulitis/ Necrosis, gangrenous changes (**vipers**)
- ❖ Frothy discharge from mouth (**cobra**)
- ❖ Pulmonary odema common (**cobra**)
- ❖ Hemorrhages in organs, intra-vascular clotting (**vipers**)
- ❖ Local signs less marked in cobra bites.

PRESERVATION

- Bite site skin and control from opposite side in NS.
- Washing / Swab from the site of bite.

MLI

- ◉ Accidental
- ◉ Suicidal
- ◉ Homicidal
- ◉ Cattle poisoning
- ◉ Excreted in breast milk
- ◉ Ingested venom
- ◉ Snake venom as addiction

Thank you
for
listening!

