

# Snake Venom poisoning

- Carnivorous reptiles: 3500 species/330 in India
- 350 poisonous/india 70 [40+30]
- OPHIDIA → Ophitoxaemia
- Most toxic poison ??????

# Differences

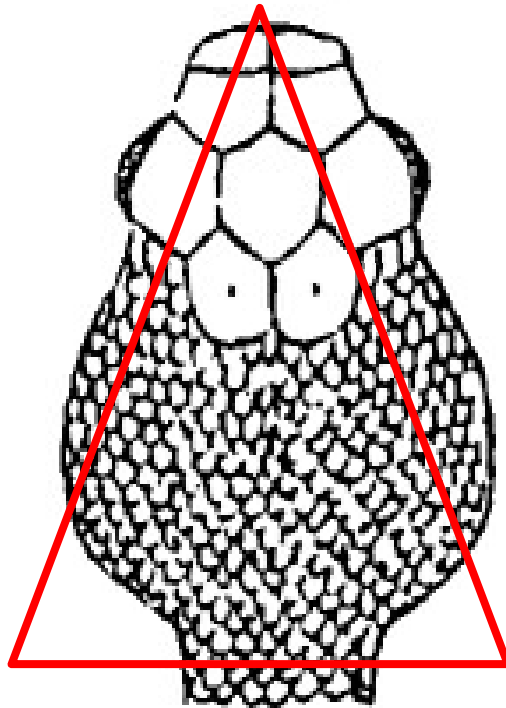
- Color : dull [P]\* or bright [NP]\*
- Shape :stout[P] or slender[NP]

\* P= poisonous, NP=Nonpoisonus

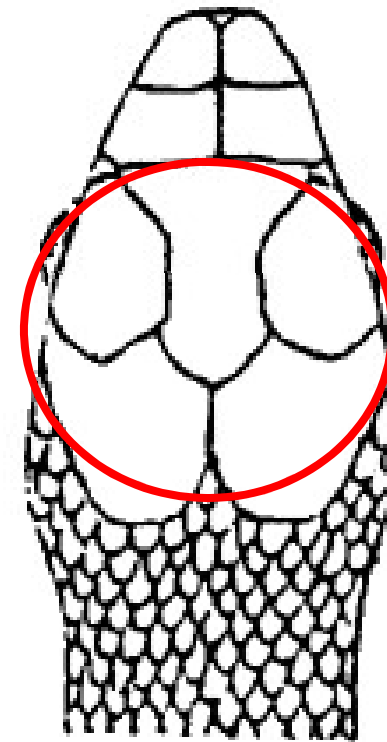
# HEAD

shape: Triangular[P] OR Rounded[NP]

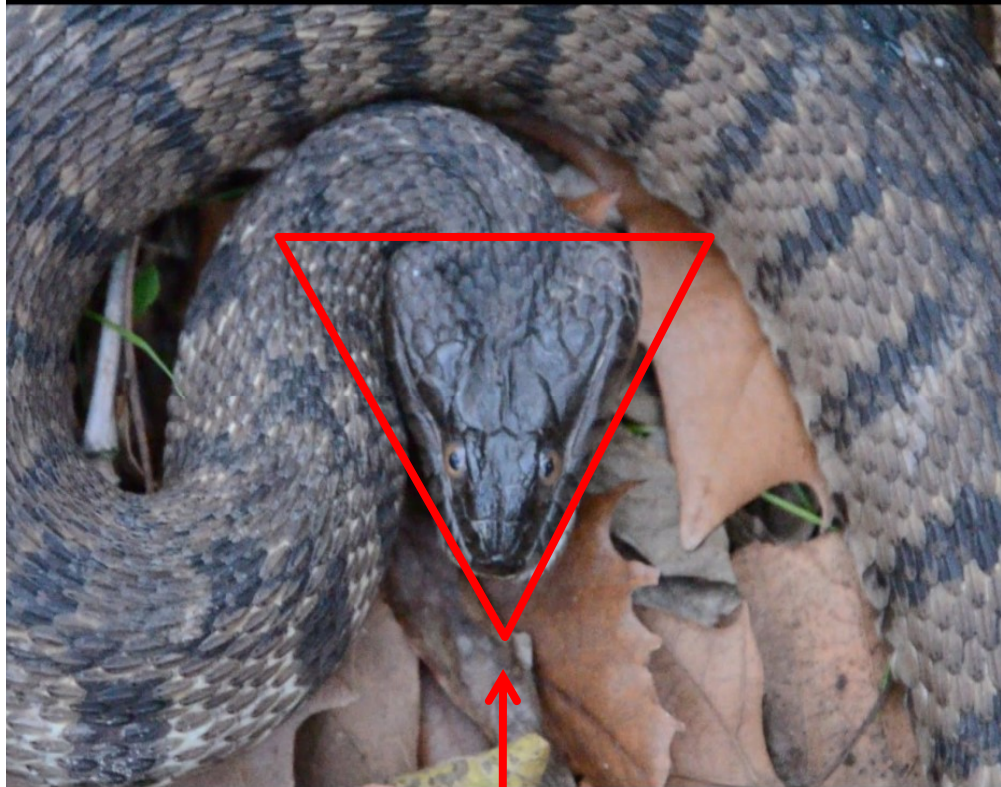
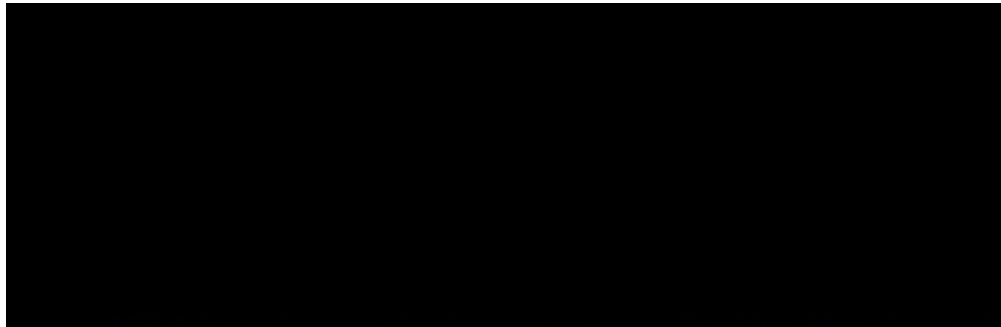
Ref: <https://nwtactical.wordpress.com/2013/05/25/how-to-identify-a-venomous-snake-from-a-non-venomous-snake/>



**Venomous**  
Exception: Brown watersnake



**Nonvenomous**  
Exception: Coralsnake



TRIANGULAR HEAD

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ROUND HEAD

# Head scales

- Smaller\* [P] or larger[NP]
- Large head scales are seen in
  - Pit viper
  - Cobra
  - krait

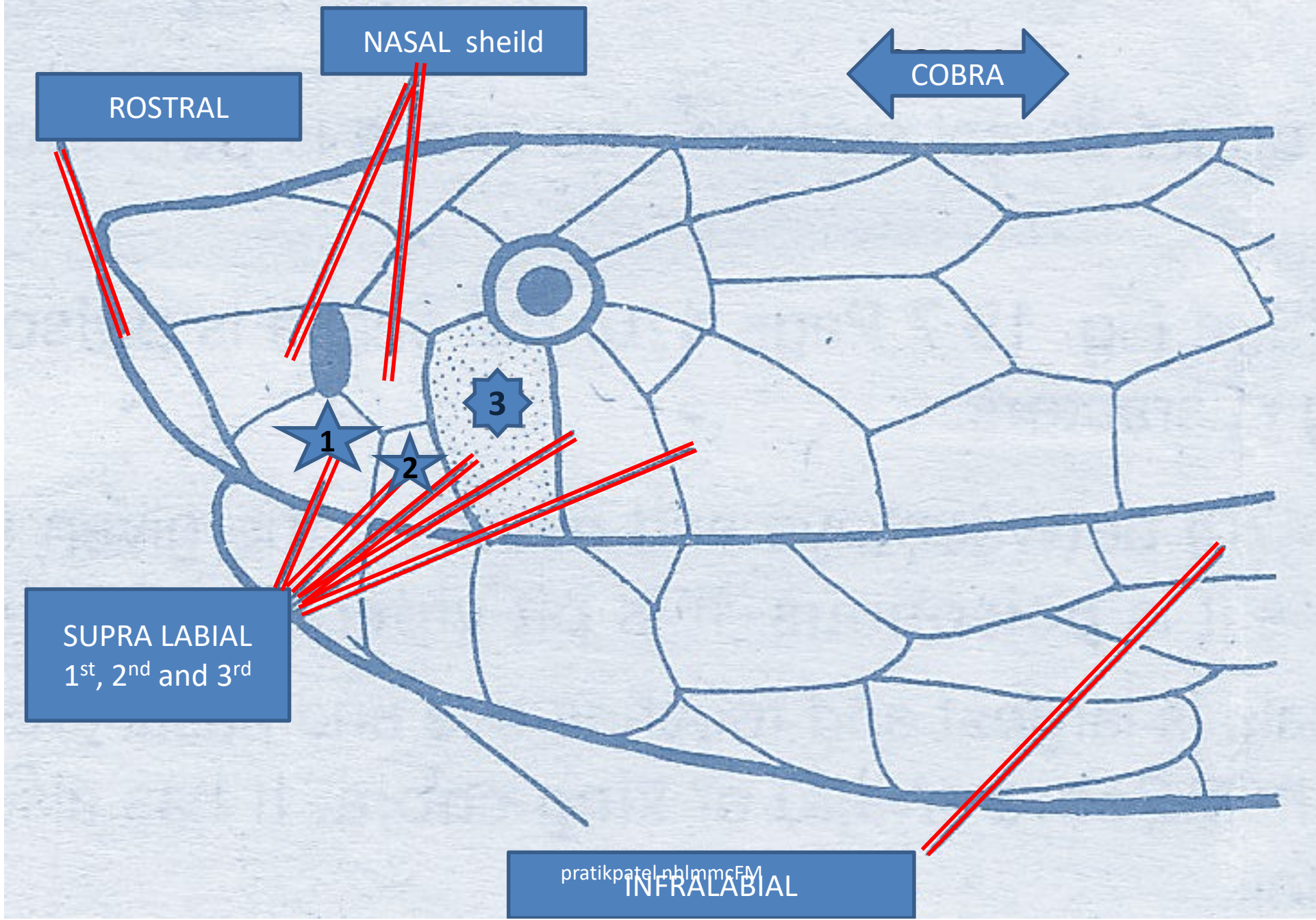
- Pit viper: with large head scales, pit present on antero inferior part of eye



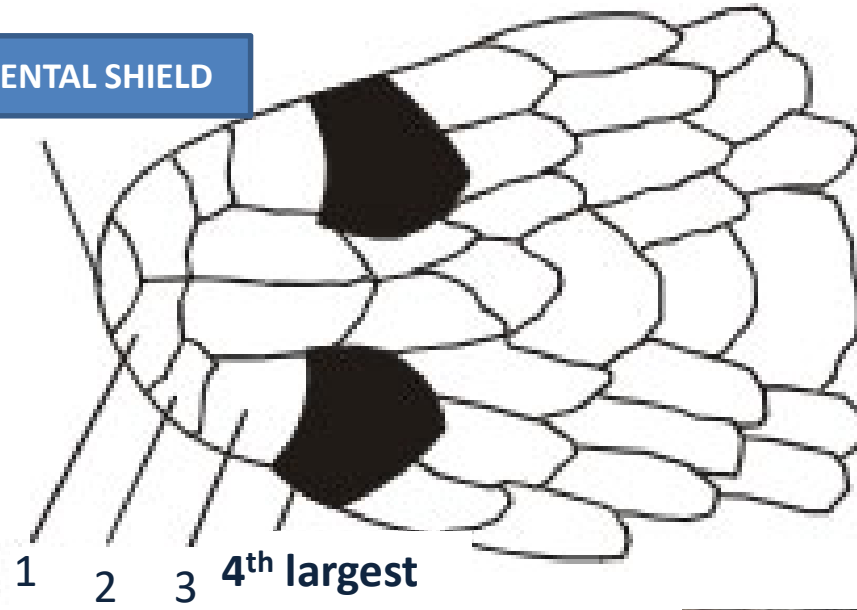
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<https://www.sciencephoto.com/media/694781/view/cameron-highlands-pit-viper>

In cobra 3<sup>rd</sup> labial scale touches the eye and nasal shield



MENTAL SHIELD



**KRAIT: 4<sup>th</sup> infra labial scale is largest**

4<sup>th</sup> largest  
infra labial  
scales



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indiansnakes.org



**Scale on body: dorsal and ventral**

**Dorsal scales**



**ventral scales**



*Featured Image Credit: Zoosystematics and Evolution/Mirza et al*

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# Ventral scales

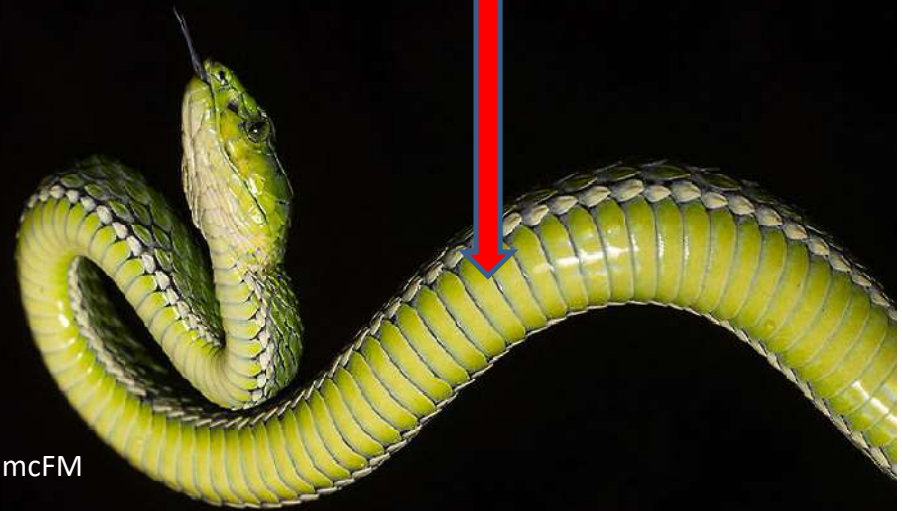
- Large and cover the entire breadth in poisonous
- Small and do not cover the entire breadth in nonpoisonous

<https://www.havahart.com/articles/identify-rid-poisonous-snakes-yard>

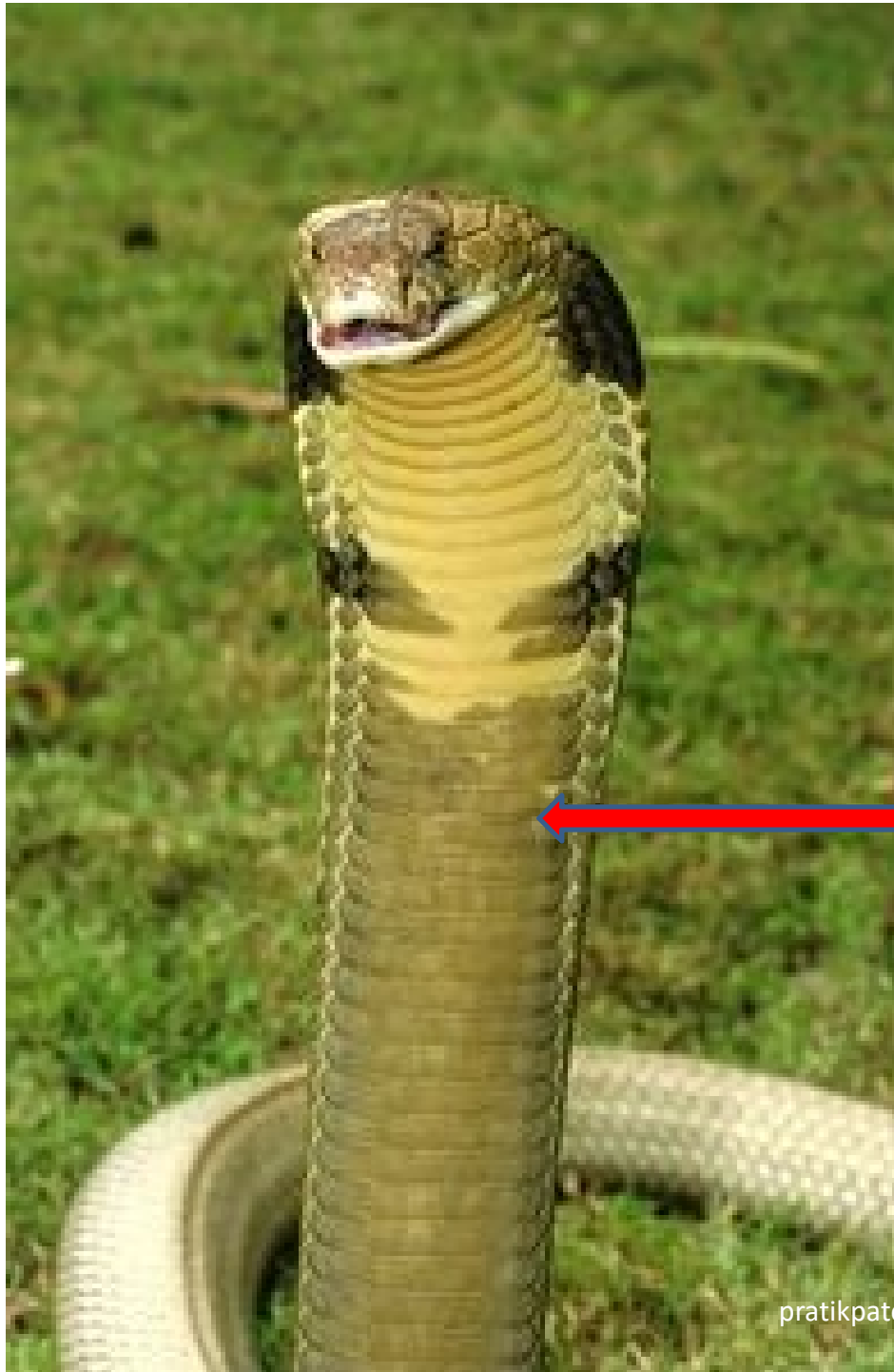


© Karissa Aki

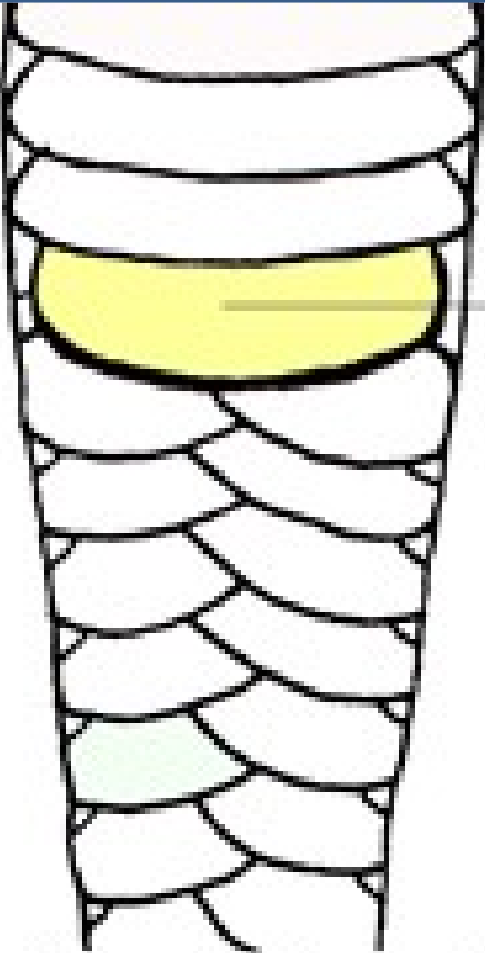
Ventral Scale covering entire breadth: poisonous snake



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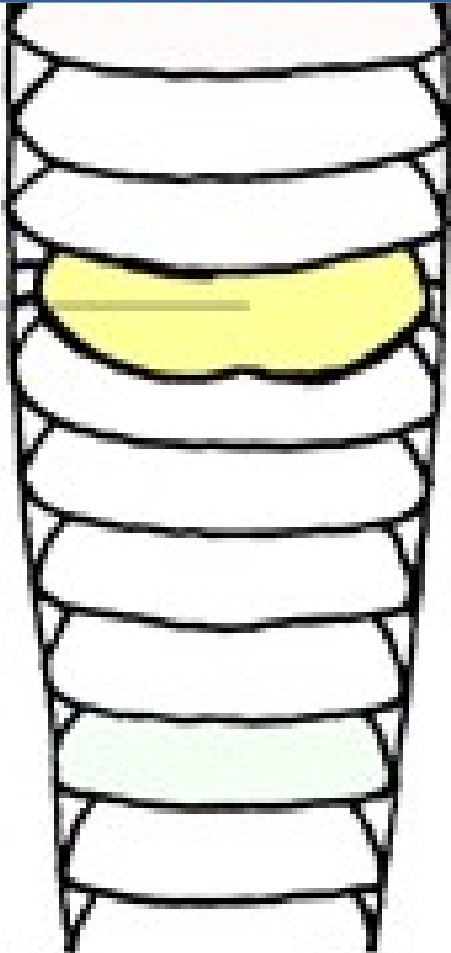


Non-poisonous snake



Dual rows of scale after anal plate

Poisonous snake

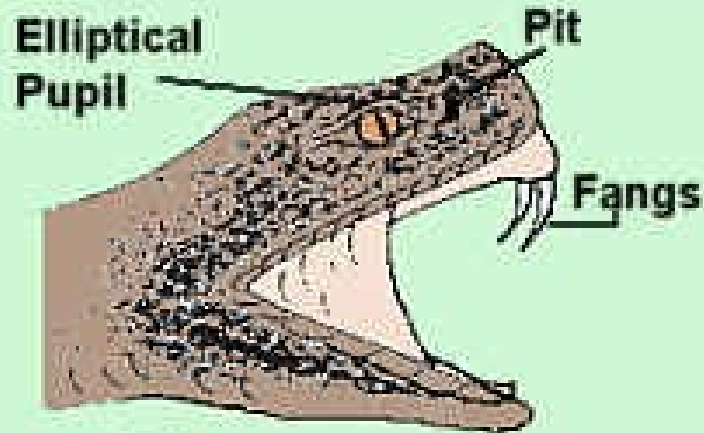


Single row of scale after anal plate

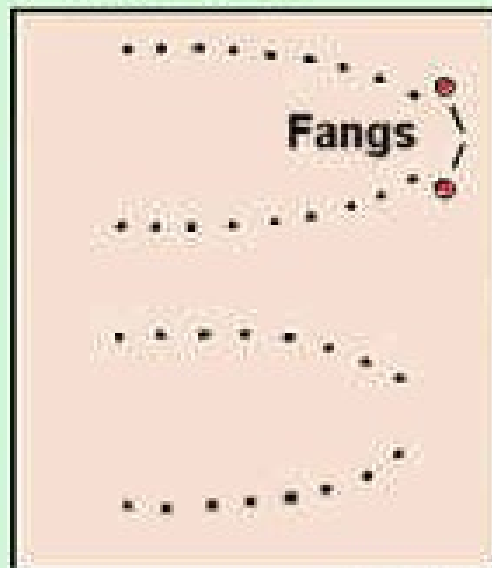
Anal plate

# Scale on back [ dorsum ]

# poisonous glands and saliva

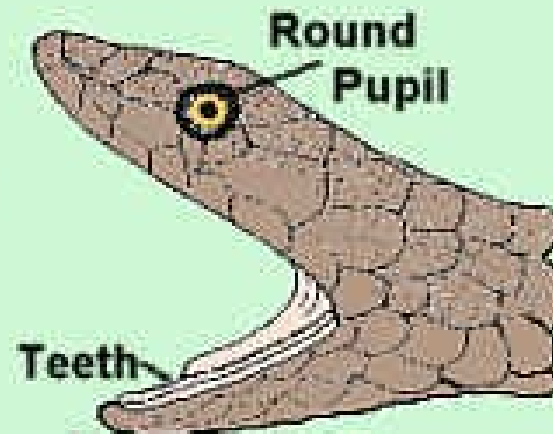


Poisonous

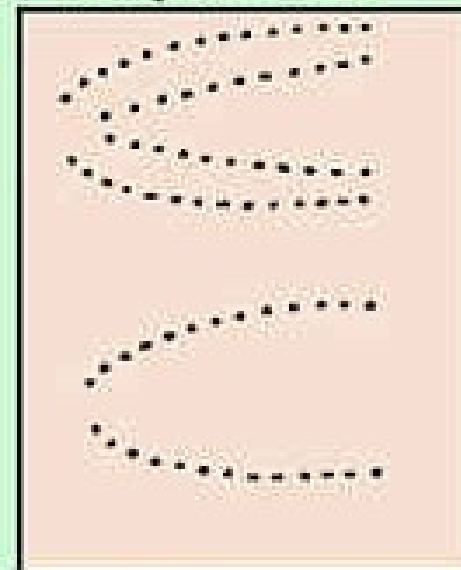


Upper  
Jaw

Lower  
Jaw



Nonpoisonous



Teeth Marks From Bite

Triangular head[Poisonous]

round head[NonPoisonous]



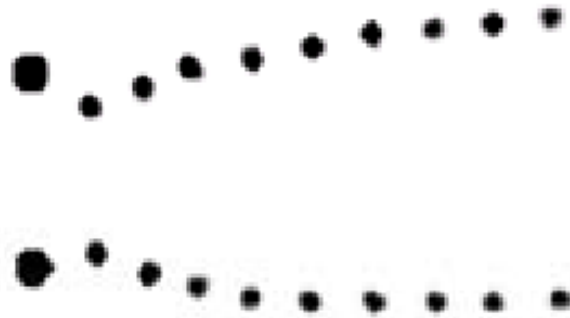
Bite of poisonous snake

and

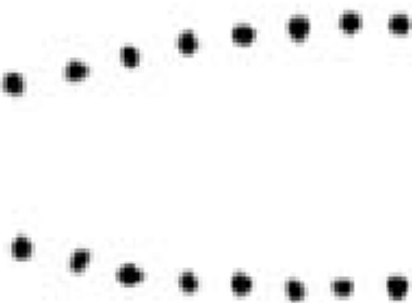
bite nonpoisonous snake



Poisonous snake



Upper jaw



lower jaw

Non-Poisonous snake



Upper jaw



lower jaw

Teeth bite marks



- One of the easiest and best way to tell if a snake is venomous or non-venomous. If the snake is venomous it will have elliptical eyes like a cat, like the little devils that they are and if it is non-venomous it will have round eyes like a human.

Ref [https://kysnakes.ca.uky.edu/snake\\_characteristics%20](https://kysnakes.ca.uky.edu/snake_characteristics%20)



**round (non-vertical)**



**vertical**



A

TAIL

(LATERALLY COMPRESSED)

(tapers abruptly)



B



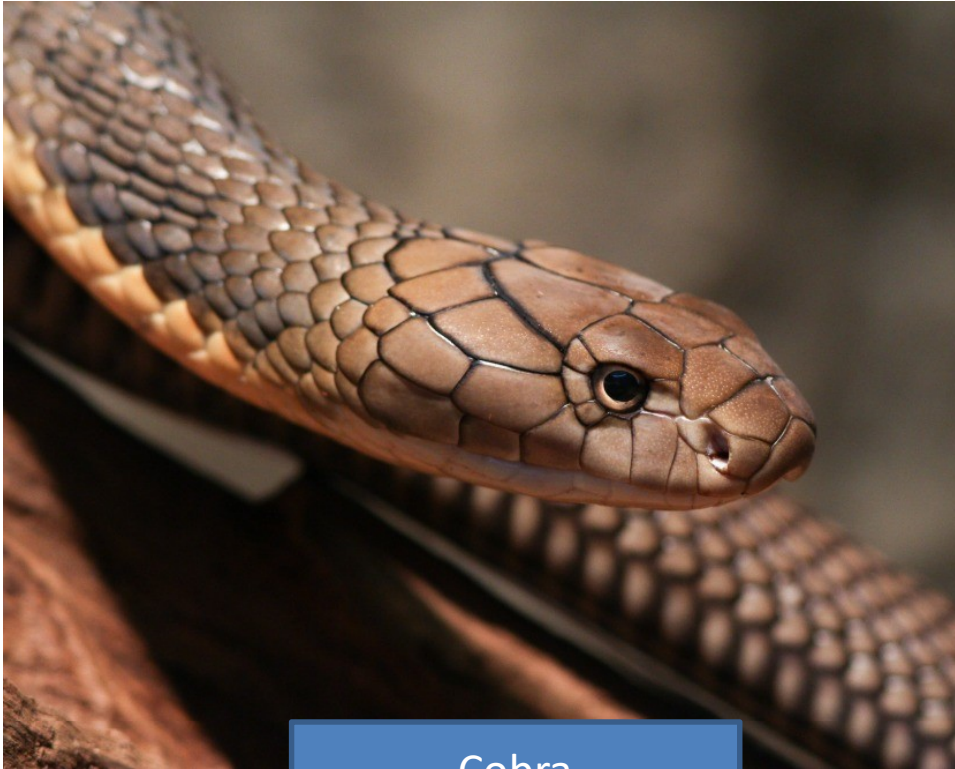
Reff: [right picture] [https://www.123rf.com/photo\\_95533269\\_perrotet%E2%80%99s-shieldtail-snake-plectrurus-perroteti-pratikbatelnhlmmcFMnataka.html](https://www.123rf.com/photo_95533269_perrotet%E2%80%99s-shieldtail-snake-plectrurus-perroteti-pratikbatelnhlmmcFMnataka.html)

## The commonest poisonous snake in India

- Saw scaled viper
- Russel's viper
- cobra
- Common crait

features	Cobra	viper
Body and neck	<b>Long</b> , cylindrical	<b>Short</b> , narrow neck
Head	<b>Small</b> , large scale [as in nonpoisonous]	<b>Large</b> , broader, small scale <b>[as in poisonous snake]</b>
Pupil	<b>Round</b> [as in nonpoisonous]	Verticle <b>[as in poisonous snake]</b>
Tail	<b>Round and tapered graadually</b> [as in nonpoisonous]	Compressed <b>[as in poisonous snake]</b>
Upper jaw	Fangs <b>and teeth</b>	Fangs
Fang	Grooved, fixed	Cannalised , mobile
Venom	N	H
Eggs	ovinarous	vivinarous

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Cobra



Viper



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**Fang with teeth [ cobra ]**



**Fang without teeth [ viper ]**



rounded tail: cobra



Compressed tail:viper



# toxicity

- Different antigenic composition
- Saliva containing 90 % proteins, polypeptides and other organic-inorganic structures
- Local and systemic effects
- Transported via lymphatics and superficial veins
- Orally: nontoxic

# Management

- Field management
  - Reassure
  - Do not temper
  - Immobilize: limb and patient
  - Elevation – **X**
  - Sutherland wrap for COBRA ??????



**Recommended for cobra, krait and sea snakes. Viper has local effects**

- **4.5 m x 10 cm elastocrepe**
- **Firmly over entire limb**
- **Include rigid splint**
- **Not tight to include peripheral pulse**
- **Can not insert finger**
- **>55mm of Hg**
- **Don't release until antivenom or treatment**
- **Use sphygmomanometer cuff and inflate it to 55 mmHg**

# Hospitalization

- ICU and monitor closely
- ABCD
- Evaluate progress of **envenomation**
  - **Level of swelling**
  - **Limb circumference**
  - **Extremity at heart level**
- Remove field applied measures
  - May result in hypotension or dysrhythmias due to release of stagnant acidotic blood
- Large bore IV access
  - Isotonic saline 20-40 ml/kg or albumin 10-20 ml/kg if no response to NaCl

# Antisnake Venom

- **Specific**
- **Polyvalent PAV**
  - **Where**
  - **How prepared: hyperimmunisation → plasma → serum lyophilized → rehydrated when to use [don't use turbid or opaque serum]**
  - **How used**
    - **Cobra**
    - **Common krait**
    - **Russell's viper**
    - **Saw scaled vipers**
  - **Best time :half life 90 ours. Usefull within 4 hr of bite. Less after 8 hrs and no use after 24 hrs.**
  - **Efficacy: 10 ml vial neutralizes 6 mg of cobra and russell's viper snake venom and 4.5 mg of common krait and saw scaled viper snake venom**
  - **Hypersensitivity test : s/c or intradermal or intraconjunctival**
    - **Causing delay in treatment**
    - **Poor indicator**
    - **May pre-sensitize to antisnake venom**
  - **Complication**
    - **Allergic reaction, blindness, serum sickness**

# Other measures

- **Vasopressure after aggressive volume resuscitation and AV**
- **Anticholinesterase inhibitors: in neurotoxic snake envenomation**
  - Ptosis
  - Inability to maintain upward gaze
  - Give neostigmin as trial [pretreat with atropin]
  - If improvement evident at 5 min continue IV/SC
  - Take care of airway/endotracheal intubation
- **Tetanus**
- **Antibiotics**
- **Pain : avoid salicylates and NSAIDs effect on blood clotting**
- **Muscle compartment syndrome**
  - Check intracompartment pressure by minimum invasive technique e.g wick catheter
  - If > 30-40 mmHg ..elevation/ iv mannitol/fasciotomy