SNAKE POISONING & MANAGEMENT
Disclaimer

“This presentation is solely intended for educational purpose only and not for any commercial activity. The ownership and copyright to the materials remain with the actual owner of the content. No claim for the originality of the content is made”
3500 species all over the world

<350 venomous

330 species in INDIA

50 venomous
CLASSIFICATION

5 families

1) *Colubridae* 78% of all species
2) *Boidae*
3) *Atractaspidae* moles & asps
4) *Elapidae* cobras, kraits, coral snakes, mambas
4) Viperidae:

@ *viperinae*/*true vipers*- vipers, adders

@ *crotalinae*/*pit vipers*- rattle snakes
IDENTIFICATION
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
Features of venomous snakes

✓ Compressed tail
✓ Broad belly scales extending across entire width
✓ Small scales on head
✓ Hood with or without markings
✓ Fangs
✓ Rattle
BELLY SCALES

VENOMOUS

NON-VENOMOUS
TOP OF HEAD

Poisonous

Harmless / poisonous
BITE MARKS

Venomous Snake

Non-venomous Snake

Fangs

Upper Jaw

Upper Jaw

Lower Jaw

Palate teeth

Lower Jaw
THE BIG FOUR

- COMMON COBRA
- COMMON KRAIT
- RUSELL'S VIPER
- SAW SCALED VIPER
COMMON COBRA
3rd supralabial touches eye and nasal shield

PAR: Parietal.
PO: Post Ocular.
AT: Anterior Temporals.
PT: Posterior Temporals.
SO: Supra Ocular.
N: Nasal.
INT: Inter Nasal.
PRF: Pre Frontal.
PRO: Pre Ocular
R: Rostral.
SIDE OF FACE

Look for third supra-labial and pit
A small wedge shaped scale (cuneate) is +nt b/w 4\textsuperscript{th} and 5\textsuperscript{th} infralabials.
✓3 small scales just behind each eye.

✓Venom- Neurotoxic
COMMON KRAIT

- Whitish half rings throughout its back
- Creamy white belly
- Hexagonal large scales throughout mid dorsal aspect
- Sub caudals are undivided
- 4th infralabial is the largest of infralabials
- Venom- Neurotoxic
Common Krait: Bungarus caeruleus
Indian Krait
RUSELL’S VIPER

• Triangular head with ‘V’ shaped mark

• 3 rows of diamond shaped dark spots along the back

• Entire broad plates on belly
Russell’s Viper: Daboia ruselli
SAW SCALED VIPER

• Waxy white lines along the entire length with diamond shaped areas b/w lines
• Head triangular with small scales characteristic white arrow/crow’s foot mark +nt on head
• Broad belly plates and entire shields beneath the plates
• Scales are serrated
Saw scaled Viper: *Echis carinata*
OTHER COMMON VENOMOUS SNAKES

King Cobra
Banded Krait
King Cobra;
Ophiophagus hannah

Banded Krait
SNAKE VENOM
Toxic saliva by modified parotid.

Concentration shows diurnal and seasonal variation
CONSTITUENTS

**Protein**
- ✓ Enzymes
- ✓ Non enzymatic toxins
- ✓ Non toxic proteins

**Non protein**
- ✓ Carbohydrates
- ✓ Metals
- ✓ Lipids
- ✓ Free AA
- ✓ Nucleotides
- ✓ Biogenic amines
SNAKE BITE

1) NON VENOMOUS

2) VENOMOUS

- with envenomation
- without envenomation (20-50%)
  - Dry bite
  - Protective gear
  - Leakage of venom
  - Superficial bite
When venom has been injected

- Fang marks
- Local pain
- Local bleeding
- Lymphangitis
- Lymph node enlargement
- Inflammation
- Blistering
When venom has been injected

- Nausea
- Vomiting
- Malaise
- Abdominal pain
- Weakness
- Drowsiness
ELAPID BITE

• Minimum local manifestations
  - swelling & local pain
  - local necrosis & blistering
  - serosanguinous discharge
  - Venom ophthalmia
• **Systemic: Neurotoxicity**
• Drowsiness
• Paresthesias
• Abnormalities of taste & smell
• Heavy eyelids, Ptosis, Diplopia, Ophthalmoplegia
• Paralysis of facial muscles, Nasal voice, Aphonia
• Difficulty in swallowing
• Generalized flaccid paralysis
• Convulsions
• Coma
• Respiratory arrest
VIPERID BITE

Marked local manifestations

➢ Swelling around bite site-> whole limb-> adjacent trunk

➢ Pain, tenderness, lymphadenopathy

➢ Persistent bleeding from the bite site
• Spontaneous systemic bleeding – epistaxis, hemoptysis, hematemesis, melaena, hematuria, vaginal bleeding
• Cardiovascular – dizziness, collapse, shock, hypotension, cardiac arrhythmias

almost synonymous with incoagulable blood
MANAGEMENT OF SNAKE BITE

✓ First aid
✓ Hospital measures
✓ Additional measures
FIRST AID

✓ Verbal reassurance
✓ Immobilization
✓ Transfer the patient to hospital
✓ Drugs:  Analgesics
          Antiemetic
          Antibiotics
          Tetanus toxoid
HOW NOT TO TREAT A SNAKE BITE

• Tight tourniquet which occludes arterial supply
• Cauterization
• Multiple deep incisions through bite site
• Suction by mouth, vacuum pump or syringe
• Application of subs like pot.permangante, phenol etc.
• Application of electric shock
• Application of ice
HOSPITAL MEASURES

➢ Emergency care
  • Airway, Breathing, Circulation, Consciousness

➢ History
Examination

▪ Local signs

▪ General Signs
  - Draining lymph nodes for tenderness or swelling
  - Pulse, BP

▪ Specific Signs
  - Evidence of paralysis
  - Evidence of coagulopathy
  - Evidence of myolysis
  - Evidence of renal impairment
Investigations

• 20 Whole Blood Clotting Test (WBCT)
• Forced expiratory peak flow rate
• Prothrombin time (PT); Activated Partial Thromboplastin time (aPTT); Platelet count
• Complete and Differential blood count
• Se Electrolytes; BUN; Creatinine; Urine examination
• Creatine phosphokinase (CPK)
AntiSnakeVenom

Indications for anti venom therapy

Systemic envenoming
• Hemostatic abnormalities
• Evidence of Neurotoxicity
• Cardiovascular abnormalities
• Acute renal injury

Severe Local Envenoming
Pregnant women & Children
## Timing

## Dose

<table>
<thead>
<tr>
<th>Name</th>
<th>Manufacturer; Antivenom</th>
<th>Approx Average initial Dose</th>
</tr>
</thead>
<tbody>
<tr>
<td>Common Krait</td>
<td>Indian manufacturers polyvalent</td>
<td>100 ml</td>
</tr>
<tr>
<td>Western Rusell’s Viper</td>
<td>Indian manufacturers polyvalent</td>
<td>100 ml</td>
</tr>
<tr>
<td>Indian Saw Scaled Viper</td>
<td>Indian manufacturers polyvalent</td>
<td>50 ml</td>
</tr>
<tr>
<td>Indian Cobras</td>
<td>Indian manufacturers polyvalent</td>
<td>100 ml</td>
</tr>
</tbody>
</table>
METHOD OF ADMINISTRATION

1. **I.V. Push injection**
   Given by slow IV injection (not more than 2ml/min)

2. **Intravenous infusion**
   Anti venom diluted in 5-10 ml/kg body weight of isotonic fluid and infused at constant rate over one hour
Repeating Anti venom...

- Blood in coagulable after 6h or bleeding after 1-2 hr
- Deteriorating neurotoxic or cardiovascular signs after 1-2 h
- Initial dose should be repeated and patient should be reevaluated for need of supportive treatment
REACTION/ADVERSE EFFECTS

❖ Early (anaphylactic) reaction
• within 10 to 180 mins of 1st dose
• Urticaria, dry cough, fever, nausea, colic, diarrhea, tachycardia

❖ Pyrogenic reactions
• within 1-2 hr
• Chills, fever, fall in BP

❖ Late (se. sickness) reaction
• 7 days after t/t
Postmortem findings

• Fang marks
• Puncture wound 1.5-2.5 cm deep
• Discoloration, swelling & cellulitis around the bite site
• Hemorrhages in bowel & lung
• Kidney inflamed
• Purpuric spots on pericardium
• Internal organs congested
Thank you