

RAJIV GANDHI INSTITUTE OF MEDICAL SCIENCES :: ONGOLE PRAKASAM DISTRICT

The C.M.E. Programme is conducted in RIMS., Ongole on 30.10.2013 between 9.00 A.M. to 4.00 P.M.

Speaker: Dr.B. Anjaiah, MD., D.CH.,
Director, RIMS., Ongole.

Chairman: Dr.Y. Mallikarjuna,
Professor of General Medicine.

Co-Chairman: Dr.Y. Rajeswara Rao,
Assistant Professor of Medicine.

Topic: **SNAKE BITE**

Introduction: Snake bite is one of the occupational problem encountered in rural people working in fields without any proper protection. They accidentally trample the snake causing snake bite. Snake bite is one of the medical emergencies encountered in hospitals. Early and proper management is required for survival of the patient. The hospital must be fully prepared to tackle the snake bite because sometimes it causes fatal complications like respiratory paralysis and severe bleeding disorders. Anti-Snake venom is initially required as a life saving drug.

There are more than 3500 snakes all over the world out which 300 are poisonous. The incidence of snake bite is more common in rural tropics, India, Pakistan, Nepal, Sri Lanka, Bangladesh, South Africa.

Classification of Snakes

1. Colubridae e.g. Boomslang, Bird snakes
2. Elapidae e.g. Cobras, Mambas, Krait, Coral snakes and Garter snakes
3. Viperidae e. g. Pit vipers, Russel's viper, Rattle snake
4. Hydrophidae e.g. Sea snakes
5. Atractaspididae e.g. Address, Natal black snakes

Seasonal Incidence

The incidence of snake bite is more common with the onset of rainy season, flooding, and rice harvesting and during construction of new buildings.

Snakes do not bite without provocation. Some species such as Asian kraits and African spitting cobras may enter dwelling at night and bite people who are asleep.

Clinical Manifestations Depending on the Type of Snake

1. Colubridae

Bleeding manifestations are the main features.

Nausea with repeated vomiting, colicky abdominal pain and headache are the initial manifestations.

There is bleeding from an old and recent wounds such as venepuncture sites and spontaneous gingival bleeding, epistaxis, haematemesis, malena, sub-arachnoid haemorrhage, haematuria, and extensive ecchymosis.

Intravascular haemolysis, and micro-angiopathic haemolysis have also been described. Renal failure is the cause of death.

Blood filled bullae are seen.

2. Elapidae (cobras, Krait, Mambas, Coral Snakes)

Local and neurotoxic features are mainly seen.

Local Features

Tender local swelling and regional lymphadenopathy are seen. Extensive necrosis of soft tissue resulting in loss of digit or limb.

Systemic Features

CNS features: Ptosis and external ophthalmoplegia are the earliest features of Elapidae envenomation. Later, paralysis involves facial muscles, palate, jaws, tongue, vocal cords, neck muscles, muscles of deglutition, respiratory muscles, diaphragm, intercostal muscles and limb muscles. Paralysis of limb muscles resulting in acute flaccid paralysis.

Neurotoxic effects are completely reversible.

3. Atractaspididae (Natal Black Snakes, Address)

Local Features: Pain, swelling, blistering, necrosis, numbness or paresthesia in the distribution of cutaneous nerve, and tender lymphadenopathy.

GIT: Fever, vomiting, profuse salivation, and finally lapsing in to coma.

Severe gastrointestinal symptoms like nausea, vomiting, and diarrhoea.

Features of anaphylaxis like dyspnoea, respiratory failure and electrocardiographic changes like A-V block, ST, T wave changes are seen.

4. Hydrophidae (Sea Snake)

The bite is usually painless. Teeth are present in the wound.

There is no local swelling or lymphadenopathy.

Early symptoms of poisoning are headache, a thick feeling of the tongue, thirst, sweating, and vomiting.

There is generalized aching, stiffness, and tenderness of muscles.

Trismus is common, later there is generalized flaccid paralysis as in elapid toxicity.

Generalised rhabdomyolysis is the dominant feature.

Myoglobinemia and myoglobinuria appear.

The serum/plasma appears brownish and urine dark reddish brown

Myoglobin and potassium released from damaged skeletal muscles can cause renal failure and hyperkalemia can cause cardiac arrest.

5. Viperidae (Pit Vipers, Russel's Viper, Rattle Snake)

Hemostatic abnormalities are characteristic of envenomation of viperidae.

Two important features are seen.

- 1) Local features: There is rapidly spreading swelling involving the entire limb and adjacent trunk. There is associated pain, tenderness, and enlargement of regional lymphnodes.

Bruising is seen along the lymphatics and lymphnodal region

Swollen limb can accommodate many liters of blood leading to hypovolemia.

Blisters may appear at the site of bite and may extend to the entire limb.

They are filled with clear or blood stained fluid.
 Necrosis of skin, sub-cutaneous tissue and muscle may be present
 Thrombosis of artery may lead to gangrene.
 Haemostatic abnormalities like bleeding from the fangs puncture sites, wounds, epistaxis, haematemesis, ecchymosis, haematuria etc.
 Retroperitoneal and intracranial haemorrhage can occur.
 Intravascular haemolysis can occur resulting in haemoglobinuria.

Clinical Features

1. Local: Presence of fang marks, pain, swelling, ecchymosis, bullae, serosanguinous discharge, bleeding, gangrene of sub-cutaneous tissue and regional lymphadenitis.
2. General features: Fever, headache, muscle cramps, diaphoresis
3. GIT: Nausea, vomiting, colicky abdominal pain,
4. Haematological: Bleeding diathesis, bleeding from the site of bite, epistaxis, haematemesis, DIC, haematuria
5. Neurological: Numbness, and tingling around the mouth, ptosis, strabismus, muscle fasciculations, drowsiness, paralysis of tongue and larynx, paralysis of intercostals muscles and diaphragm, hemiplegia, seizures, and coma
6. Renal: Acute tubular necrosis, glomerulonephritis
7. Cardiac: Arrhythmia, and shock
8. Respiratory: Pulmonary oedema

Treatment

- Apply tourniquet above the fang marks and also 5 cm above the oedema, tight enough to obstruct lymph flow but not the venous flow.
- Clean the wound with sterile solution
- Immobilise the limb

Specific therapy

Use of anti-snake venom

Indications

- Systemic features like haematological, cardiopulmonary, neurological,
- Local manifestations like rapidly spreading oedema, local oedema involving more than half of the bitten limb, regional lymphadenitis

Dosage Guidelines for Anti-venom

Severity of Envenomation	Clinical features	Amount of anti-venom (vials)
Mild	Progressive local swelling with or without lymphadenitis, and local ecchymosis/purpura	5 vials
Moderate	Mild systemic signs or coagulation defect or haematological changes, nausea, vomiting, bradycardia	5-15 vials
Severe	Rapidly progressive swelling, with extensive local effect, systemic signs and symptoms DIC, encephalopathy, shock, paralysis	15-20 vials

Mode of Administration

Each vial of anti-snake venom is diluted in 10ml of normal saline and given at the rate of 4ml/min. It can be mixed in 30ml of normal saline and given very slowly and increased the rate, if there are no reactions.

Treatment of Reactions

Some patients may develop reactions like anaphylaxis, hypotension, bronchospasm, and angioneurotic oedema. They can occur in 3-34% of patients within 10-180min.

They are managed with 1) SC or IV adrenaline 0.01ml/kg; + steroids (hydrocortisone 6mg/kg IV); + anti-histamine: (diphenhydramine hydrochloride 1mg/kg IV) and dopamine.

Stop the anti-venom for some time and can be infused in severe envenomation under cover of adrenaline, steroids, and anti-histamine.

Neurotoxic envenomation leading to respiratory paralysis can be managed with atropine sulphate 50micrograms/kg and neostigmine methylsulphate 50-100micrograms/kg 4 hourly can be given.

Supportive Therapy

IV crystalloids, fresh blood transfusion, fresh frozen plasma and dopamine for shock can be given.

Contraindications to Anti-snake venom

1. History of atopic disorders
2. Sensitive to equine anti-snake venom