

# Snake bite

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# CROTALINEA BITES



# PATHOPHYSIOLOGY

- Crotaline venom is a complex enzyme mixture
- local and systemic effects.

# CLINICAL FEATURES

- Up to 25% of bites are dry bites.
- What affects clinical features :
  - 1. the species and size of the snake
  - 2. the age and size of the victim
  - 3. the time elapsed since the bite
  - 4. characteristics of the bite

- Cardinal manifestation :
- One or more fang marks, localized pain, progressive edema
- Nausea and vomiting, weakness, oral numbness or tingling of the tongue or mouth, dizziness, muscle fasciculation.
- tachypnea, tachycardia, hypotension, altered level of consciousness.

# DIAGNOSIS

- Diagnosis of snakebite : the presence of fang mark and a history with exposure to a snake
- Snake envenomation : presence of snakebite plus evidence of tissue injury.
- Local injury : swelling, pain, ecchymosis,
- Hematologic abnormality : thrombocytopenia, elevated prothrombin time, hypofibrinogenemia.
- Systemic effects : oral swelling or paresthesia, metallic or rubbery taste in the mouth, hypotension, tachycardia.

# TREATMENT

- FIRST AID
- Avoid dangerous first aid treatment such as suction and incision.
- Do not use tourniquets.
  
- Recommended first aid measures :
  - 1. retreat well beyond striking range.
  - 2. remain calm. Movement will increase venom absorption.
  - 3. immobilize the extremity in a natural position below the level of the heart.

- 4. ensure prompt transport to a medical facility whether or not there are signs of envenomation.
- 5. constriction bands can be applied if there is no nearby medical facility.
  
- Prehospital management :
- Immobilize the limb, establish IV access, administer oxygen, and transport to a medical facility.
- Do not remove tourniquets or constricting bands.



# ED MANAGEMENT

- Antivenom is the mainstay of therapy for venomous snakebites.
- All snakebite patients who develop progressive signs and symptoms should be treated promptly with antivenom.
  
- Patient with indication for “FabAV” administration :
- Administer 4-6 vial of “FabAV” to initial control of envenomation.
- If achieve initial control, infuse additional 2-vial doses at 6,12,18 h after initial control
- If it is not control, repeat it.
- In children the total volume but not the number of vials may be reduced.

- Laboratory evaluation :
- CBC, INR or prothrombin time, PTT, Fibrinogen level ( should be perform as soon as possible and repeat within 12 h)
- Fibrin degeneration product levels, serum electrolyte levels, glucose level, BUN level, platelet count, creatine kinase level.
- ECG ( if age >50 years and patient with a history of heart disease)
- Arterial blood gas ( if any signs or symptoms of respiratory compromise)
  
- If administer antivenom, repeat laboratory determinations every 4h or after each course of antivenom therapy.

- COMPARTMENT SYNDROME :
- Determine intracompartment pressure.
- If it is  $> 30\text{mmHg}$  : elevate the limb, administer mannitol 1-2grams/Kg over 30 min, simultaneously administer additional antivenom over 60min.
- If elevated compartment pressure persists another 60min, consider fasciotomy.

# DISPOSITION AND FOLLOW UP

- Observe patients for at least 6 to 8 hours in the ED before disposition.
- The absence of any of three category of manifestation for a period of 8 to 12 hours, indicates a dry bite. And can be discharge with instruction to return.
- Outpatient follow up after hospitalization is necessary to monitor for infection and serum sickness.

# ELAPID SNAKEBITES



# CLINICAL FEATURES

- Even with severe envenomation patients may initially feel well and manifest few clinical features.
- Early symptoms include : nausea, vomiting, headache, abdominal pain, dysphonia, discolored urine, progressive muscle weakness, neurologic effects such as tremor, salivation, dysarthria, diplopia, bulbar paralysis with ptosis, fixed and constricted pupils, dysphagia and seizure.

# DIAGNOSIS

- Correlation of history, clinical features, and laboratory investigation.
- Laboratory tests often determine if the patient require antivenom treatment.
- Prothrombin time(PT), INR, activated PTT, D-dimer, fibrinogen, fibrinogen degradation products, hemoglobin, platelet count, electrolytes, renal function test, creatine kinase.
- Should perform prior to removal first aid, 1h after removal of first aid, at 6 and 12 hours after bite.

# TREATMENT

- FIRST AID :
- Use of tourniquet is contraindicated.



- ED MANAGEMENT :

- Maintain pressure bandaging and immobilization until envenomation is excluded or until the patient can receive antivenom.
- Antivenom should be given only in cases in which there is clear clinical or laboratory evidence.
- Clinical indications : evidence of neurotoxic effects, coagulopathy, rhabdomyolysis, renal failure, cardiac collapse, significant local tissue injury, vomiting unresponsive to antiemetics.
- Dilute antivenom about 1:10 in normal saline, infusion slowly and gradually increase the rate.