Jacobi Medical Center Management of Pit Viper Snakebites

Includes: Rattlesnakes, Copperheads, and Cottonmouths

Assess Patient

- Mark leading edge of swelling and tenderness q15-30 mins
- Immobilize and elevate extremity
- Treat pain (IV opioids preferred)
- Obtain initial lab studies (PT, Hgb, platelets, fibrinogen)
- Update tetanus
- Contact Snakebite Treatment Team

Check for Signs of Envenomation

- Swelling, tenderness, redness, ecchymosis, blebs at the bite site, **or**
- Elevated PT, decreased fibrinogen or platelets, **or**
- Systemic signs such as hypotension, bleeding beyond the puncture site, refractory vomiting, diarrhea, angioedema, neurotoxicity

None

Apparent Dry Bite / No Bite

- Do not administer AV
- Observe patient ≥8 hrs
- Repeat labs prior to discharge
- If patient develops sign of envenomation, return to previous box

Present

Check for Indications for Antivenom

- Swelling that is more than minimal and is progressing, or
- Elevated PT, decreased fibrinogen or platelets, or
- Any systemic signs

None

Apparent Minor Envenomation

- Do not administer AV
- Observe for 12-24 hrs
- Repeat labs at 4-6 hrs and prior to discharge
- If patient develops progression of any signs of envenomation, return to previous box

Present

Administer Antivenom

Snakebite Treatment Team MUST be present

- Establish IV access and give IV fluids
- Pediatric dose of AV = adult dose of AV
- Mix 4-6 vials of crotaline Fab AV (CroFab®) in 250mL NS and infuse over 1 hr
  - For patients in shock or with serious active bleeding, increase initial dose of AV to 8-12 vials
- Initiate and complete initial dose of AV in ED
- Re-examine patient treatment response within 1 hr of completion of AV infusion

Maintenance AV Therapy

- Maintenance therapy is additional AV given after initial control to prevent recurrence
- Administer 2 vials of AV at 6, 12, 18 hrs after initial control
- Maintenance therapy not indicated for minor envenomation

Determine if Initial Control of Envenomation has been Achieved

- Swelling and tenderness not progressing
- PT, fibrinogen, platelets normal or clearly improving
- Clinically stable (not hypotensive, etc.)
- Neurotoxicity resolved or clearly improving

No

Repeat AV until initial control is achieved

Yes

Monitor Patient

- Perform serial examination q6 hrs
- Maintenance AV therapy may be indicated
- Observe patient 18-24 hrs after initial control for progression of any venom effect in Burn ICU
- Follow-up labs 6-12 hrs after initial control and prior to discharge
- If patient develops new or worsening signs of envenomation, administer additional AV

Discharge Planning

- Instruct patient to return for:
  - Worsening swelling not relieved by elevation
  - Abnormal bleeding (gums, easy bruising, melena, etc.)
  - Symptoms of serum sickness (fever, rash, muscle/joint pains) develop
- Bleeding precautions (no contact sports, elective surgery, dental work etc.) for 2 weeks in patients with
  - Rattlesnake envenomation
  - Abnormal PT, fibrinogen, or platelet at any time

Discharge Criteria

- No progression of any venom effect during the observation
- No unfavorable lab trends in PT, fibrinogen, or platelets

by: Vincent Nguyen 2016

Adapted from Lavonas et al. *BMC Emergency Medicine* 2011, 11:2

Jacobi Medical Center Management of Exotic Snakebites

Includes: Foreign or Exotic Venomous Snakes

Asymptomatic (Apparent Dry Bite)

- If no features of local or systemic envenomation, do not administer AV
- Observe for ≥24 hrs
  - Coagulopathy typically presents within 12 hrs
  - Neurotoxic and myotoxic snake species warrant longer observation (24 hrs post-bite)

Local Effects Only

- Role of AV is uncertain
  - Case-by-case basis
- AV may be indicated for:
  - Rapid progression (over 1-2 hrs)
  - Severe local effects (blistering, bruising, hemorrhagic blebs, necrosis)

Assess Patient

- Contact Snakebite Treatment Team
- If pressure immobilization is in place, do NOT remove until monitoring, assessment, and AV (if needed) are provided
- Obtain initial lab studies (PT, Hgb, platelets, fibrinogen, CPK)
- Treat pain (IV opioids preferred)
- Update tetanus

Initial Care

- Mark leading edge of swelling and tenderness q15-30 mins
- Immobilize envenomed limb and apply pressure dressing
- Avoid excessive movement of patient, excessive manipulation of bitten extremity

Emergent Management

Shock

- May be secondary to:
  - Hemorrhage from coagulopathy
  - Fluid shift into bitten limb
  - Vasodilation from venom effect
  - Myocardial depression from venom effect
- Rapid infusion of NS or blood
- If fluid status restored but shock not reversed, start vasoactive medications

Neurotoxic

- Administer AV if any early signs of paralysis, including:
  - Ptosis
  - Ophthalmoplegia
  - Bulbar symptoms (difficulty speaking/swallowing)

Coagulopathy

- Asymptomatic patients with **ALL** of the following should be treated with AV
  - INR >3.0, **and**
  - PTT >50 secs, **and**
  - Platelets <50,000/microL, **and**
  - Fibrinogen <75 mg/dL
- Treat coagulopathy + hemorrhage with AV
- Persistent bleeding (continued bleeding 30 mins after AV) should prompt treatment with more AV
  - Lab abnormalities may resolve more slowly (~6 hrs)
- Give blood products (whole blood or FFP) + AV for life-threatening hemorrhage

Respiratory Depression

- Severe paralysis may lead to respiratory depression necessitating intubation
  - Provide sedation for intubation
  - The need for muscle relaxants should be assessed on case-by-case basis
- Atropine can be given if patient exhibits hypersalivation

Rhabdomyolysis

- Isolated myotoxicity should be treated with AV on case-by-case basis
  - Myotoxicity caused by Australian species envenomation should be treated with AV
- Rapid infusion of NS to establish urine output of 200-300 mL/hr (4 mL/kg/hr in children)

Unknown

Determine Snake Species

Administer Antivenom

Snakebite Treatment Team MUST be present

- Pretreat with IV antihistamines and steroids
- Pretreat with epinephrine if AV associated with high rates of allergic reactions
- Dilute AV in NS and infuse over 30-60 mins
- Monitor in ED during and for 1 hr following initial dose of AV

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