Bites, Stings, and Envenomation
Agenda

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Purpose

This CPG provides evidence–based guidelines for the management of bites and envenomation.
Summary

- Differences exist in treatment of bites from different species
- Envenomation requires aggressive medical care
Key Principles of CPG

- Bites
- Envenomation
- PI Monitoring

- References
- Appendices
Evaluation of Bites

- All bites and stings from vertebrate organisms should be evaluated by plain radiograph as barbs and teeth are frequently left in patients after attacks.

- Tetanus and rabies status (only for mammalian bites) must be addressed.

- Type of environment must be assessed
  - Marine environment can have decompression sickness if deep enough.
  - Some infectious organisms are more common in certain conditions than others.
Evaluation of Bites

Timing and identification of organism is important if possible to note.

- Unknown timing and source common for arthropod bites
- If arthropod bite, neurotoxic/allergic effects will be immediate, loxoscelism will be delayed presentation
Treatment of Mammalian Bites

- Aggressive washout and debridement as indicated/
  - Delayed primary closure or healing by secondary intention safest
  - Close follow-up for 1 to 2 days

- Rabies vaccine and rabies immunoglobulin should be considered.

- Antibiotic prophylaxis, typically amoxicillin-clavulanate, for three days is recommended for high-risk wounds.
  - Associated significant crush injury
  - Deep puncture
  - Cat bites
  - Bites near joints, hands, face, or genitalia
  - Wounds requiring closure
Treatment of Marine Bites

- Aggressive washout and debridement (removal of barbs and teeth) as indicated
- Treatment for decompression sickness if applicable (generally happens within 48 hrs of rapid ascent below 30 ft)
- Antibiotic prophylaxis includes generally trimethoprim-sulfamethoxazole, ciprofloxacin, or doxycycline for 3 days
- Antivenins for box jellyfish and stonefish potentially available if applicable
Treatment of Arthropod Bites

- Neurotoxic and anaphylaxis effects from various scorpions, spiders, and other insects can happen.
  - Transfer to facility with appropriate antivenin if signs of systemic illness

- Loxoscelism is generally only bite that needs addressing surgically
  - Most commonly confused with cellulitis as patient did not know was bit
  - Typically does not heal and worsens with appropriate course of antibiotics
  - Will demarcate in 1-2 weeks after which debridement, closure or possible skin grafting is required
  - Antibiotics only for signs of infection
  - Symptomatic support of systemic symptoms
Envenomation

Local Manifestations

- Burning pain within minutes
- Edema
- Erythema
- Swelling

- Ecchymosis
- Hemorrhagic bullae
- Lymphangitis/lymphadenopathy
- Necrosis (late finding)
Systemic Manifestations

- Nausea, vomiting (earliest findings)
- Weakness
- Headache
- Tachycardia
- Paresthesias
- Bulbar symptoms
- Diplopia
- Shock
- Twitching
- Consumptive coagulopathy
- Rhabdomyolysis
- Muscle paralysis
- Renal failure
- Capillary leakage
- Pulmonary edema
- Hypotension
Evaluation of Envenomation

- Snake bites should be presumed venomous and the patient sent to a location with antivenin and intensive care capabilities.
  - A significant minority are dry bites (no venom delivered).
  - If no symptoms, can be admitted to a ward and watched 24 hours. If still no symptoms, can be safely discharged after this time.
- Those with symptoms signs should be admitted to ICU environment.
Evaluation of Envenomation

- Initial evaluation should include trauma assessment.

- Additional labs/tests when possible should include:
  - CBC
  - PT/INR
  - Fibrinogen
  - EKG
  - Creatine Kinase
  - Complete Metabolic Panel
  - Urine protein/blood/myoglobin

- Laboratory derangements will help guide supportive care.
Initial treatment is supportive outside of antivenin.

- Remove constricting clothing.
- Clean wound.
- Mark site of the bite to demarcate initial erythema and swelling.
- Avoid FFP, cryoprecipitate and platelets as they may worsen consumptive coagulopathy.
Treatment of Envenomation

- Treatment with antivenin is mainstay
  - In addition to consulting CPG algorithm, consult with pharmacy on any specific dosing requirements
  - Consider pre-treatment for anaphylaxis and monitor for signs during administration

- Supportive care for complications such as airway loss, shock, and rhabdomyolysis

- Extremities may swell drastically, do not resort to fasciotomy immediately as compartment syndrome very rare
  - Consider if compartment pressures greater then 35 mm Hg after antivenin therapy
Intent (Expected Outcomes)

- Rapid evaluation and transfer to site with antivenin capability for envenomation
- Tetanus, rabies, and antibiotic prophylaxis when appropriate

Data Source

- Patient Record
- Department of Defense Trauma Registry (DoDTR)
PI Monitoring

- Performance/Adherence Measures
  - Prophylactic antibiotics for mammalian and marine bites
    Transfer of patients to antivenin if non-available at site
  - Administration of antivenin with any clinical symptoms
  - Rabies prophylaxis for mammalian bites
  - Tetanus prophylaxis for all bites and stings
  - Antivenin administration prior to fasciotomies/dermotomy for envenomation
References


References


List of Appendices in CPG

- Appendix A: Medical Facilities and Stocked Antivenins
- Appendix B: CROFAB Treatment Algorithm
- Appendix C: Additional Information Regarding Off-Label Uses in CPGs