Joint Trauma System

Bites, Stings, and Envenomation

Clinical Practice Guideline (CPG) Training

Joint Trauma System Trauma Care Educational Program

Disclosure/Disclaimer

- No financial disclosures
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Purpose

- These slides are based on the JTS Global Spider and Scorpion Envenomation Management CPG which gives an overview of spider and scorpion envenomation and presents a standardized approach to providers in the evaluation and treatment of patients with spider or scorpion induced poisoning.
- Date of CPG publication: 09 Feb 2021
- JTS CPGs are evidence-based guidelines developed by subject matter experts in the military and civilian communities. CPGs are compiled from DoD Trauma Registry data, health data abstracted from patient records and after action reports.
- Information contained in this presentation is only a guideline and not a substitute for clinical judgment.

Summary

- Differences exist in treatment of bites from different species.
- Envenomation requires aggressive medical care.
- Antivenom is available for some species; data regarding the benefits and risks of many of these antivenoms are significantly limited.

Evaluation of Bites

- Evaluate all bites and stings from vertebrate organisms by plain radiograph as barbs and teeth are frequently left in patients after attacks.
- Address tetanus and rabies status (only for mammalian bites).
- Assess type of environment.
  - Marine environment can have decompression sickness if deep enough.
  - Some infectious organisms are more common in certain conditions then others.

Evaluation of Bites

Timing and identification of organism is important, if possible.

- 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
- Consider rabies vaccine and rabies immunoglobulin.
- 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 trimethroprim-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 if applicable.
- Loxoscelism is generally the only bite that needs addressing surgically.
  - Commonly confused with cellulitis when patient did not know he/she 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.
  - Administer antibiotics only for signs of infection.
  - Symptomatic support of systemic symptoms.

Envenomation Overview

- **Local Manifestations**

  burning pain within minutes, edema, erythema, swelling, ecchymosis, hemorrhagic bullae, lymphangitis/lymphadenopathy, necrosis (late finding)

- **Systemic Manifestations**

  nausea and vomiting (earliest findings) weakness, headache, tachycardia, paresthesias, bulbar symptoms, diplopia, twitching, consumptive coagulopathy, rhabdomyolysis, muscle paralysis, renal failure, capillary leakage, pulmonary edema, hypotension, and shock

Envenomation Evaluation (1)

- Presume all snake bites are venomous and send the patient to a location with antivenin and intensive care capabilities.
  - A significant minority are dry bites (no venom).
  - If no symptoms, admit the patient to a ward and watch for 24 hours. If still no symptoms, the patient can be safely discharged.
- Admit those with symptoms/signs to ICU.

Envenomation Evaluation (2)

- Initial evaluation should include trauma assessment.
- Additional labs/tests (when possible) should include:
  - Complete blood count
  - Prothrombin time/international normalized ratio (PT/INR)
  - Fibrinogen
  - EKG/electrocardiogram
  - Creatine kinase
  - Complete metabolic panel
  - Urine protein/blood/myoglobin
- Laboratory derangements will help guide supportive care.

Envenomation Treatment

Initial treatment is supportive outside of antivenin

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

PI Monitoring

- Intent (Expected Outcomes)
  - Rapid evaluation and transfer to site with antivenin capability for envenomation
  - Tetanus, rabies, and antibiotic prophylaxis when appropriate
- Performance/Adherence Metrics
  - Transfer of patients with moderate to severe symptoms (grades 3 and 4) to antivenom if not available at site
  - Aggressive use of benzodiazepines as indicated for agitation, neuromuscular stimulation, tachycardia, and hypertension
  - Tetanus prophylaxis for all bites and stings.
- Data Source
  - Patient Record
  - Department of Defense Trauma Registry

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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

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