Spiders and Snakes
Martin Belson, MD

Spiders
1) Brown recluse (loxosceles reclusa)

- brown violin marking on the dorsum of the cephalothorax, 3 eyes,
- hides in clothing/closets
- bite usually painless
- skin or systemic involvement or both
- cytotoxic enzymes in venom responsible for dermatonecrosis & hemolysis
- unable to predict toxicity in affected patients

Dermatology: if progression, see pain and erythema in first 2 hours >>
  hemorrhagic vesicle at 2-8 hours >>
  “bullseye” at 24 hours >> eschar day 4-5

Systemic reaction rare: develops 24 - 48 hrs. after bite
- fever, chills, emesis, myalgia, ATN, seizures, DIC
- no correlation with severity of skin destruction

Therapy
- supportive care, analgesics, wound care, tetanus if indicated
- no antivenin
- steroids ?, no bite excision until at least 6 weeks following the bite

Dapsone - no controlled studies, inhibits migration of leukocytes into
  the envenomation site to decrease release of cytotoxic enzymes
  - dose = 50 - 100 mg/d bid
  - use within 12 hours if possible
  - consider concomitant use of cimetidine
  Side effects: anemia, methemoglobinemia

Hyperbaric oxygen?
Admit for systemic signs / expanding necrotic lesion
Monitor labs:

CBC
PT/PTT
UA
T&C
Chemistry, BUN/Cr., LFTs

2) **Black widow** (*latrodectus mactans*)

- female, red hourglass on belly, most venomous in summer
- found under woodpiles, cardboard, tin cups
- sharp pain on bite
- local symptoms unremarkable (mild erythema w/ central blanching)
- venom spreads through the lymphatic system
- venom stimulates release of acetylcholine / norepi. at the
  neuromuscular junction >> excessive stimulation of motor end plates
- increased risk: children, pregnant women, elderly, chronically ill
- local muscular pain >> chest or abdominal pain >> generalized pain
- NV, HTN, tachycardia, diaphoresis
- periorbital edema / facial swelling
- pavor mortis (fear of death)
- facies lactrodetisismica

**Severe:** shock, coma, seizures

**Therapy**

- supportive care
- local wound care
tetanus if indicated
analgesics: morphine, meperidine
anxiolytics: diazepam, lorazepam
Calcium gluconate for muscle spasms?
antibiotics if signs of infection
severe HTN – nitroprusside

**Black widow Antivenin:** derived from horse serum
- rapidly effective, useful within 48 hours
- dose = 1 vial
- may repeat in 1 hour
- Indications: high risk groups, intractable HTN

Admit for systemic signs / symptoms
- no specific labs indicated

Snakes

- 6000-8000 venomous bites per year in the US
- highest rate of venomous snakes are in the South

Characteristics
- cold blooded (seeks shelter at 55 degrees)
- poor vision, great smell
- slow but can strike 11 feet/sec.
- Rattles are interlocking keratin rings
- Jacobson’s organ at end of the forked tongue used to ID prey
- venom with potent enzymes that effect coagulation, multi-organ function

<table>
<thead>
<tr>
<th>Venomous</th>
<th>Nonvenomous</th>
</tr>
</thead>
<tbody>
<tr>
<td>triangular head</td>
<td>round head</td>
</tr>
<tr>
<td>elliptical eyes</td>
<td>round eyes</td>
</tr>
<tr>
<td>pits</td>
<td>no pits</td>
</tr>
<tr>
<td>single caudal plates</td>
<td>double caudal plates</td>
</tr>
<tr>
<td>fangs</td>
<td>no fangs</td>
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</tbody>
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- over 95% in the pit viper family: Eastern diamondback rattlesnake (Crotalus)
  Copperhead (Agkistrodon)
  Cottonmouth (Agkistrodon)

- 1% Elapidae family: Eastern Coral snake
a) **Eastern Diamondback Rattler**
- accounts for 90% of lethal bites, does not inject venom in 20% of bites
- coastal SE and south Georgia
- local intense pain in minutes, metallic taste, diaphoresis, NV, perioral numbness
- Skin: erythema to vesicles and ecchymosis
- Systemic: hemolysis, seizure, shock, renal failure, coagulopathy

b) **Copperhead**
- most common pit viper but least venomous, not aggressive
- copper head with brown hourglass designs
- usually minimal local and systemic reactions
- conservative management usually suffices

c) **Cottonmouth** (water moccasin)
- prefers swamps and lakes, belligerent
- white buccal mucosa with a dark head
- intermediate severity between copperhead and rattler

**Management:**
Immediate transport to a healthcare facility
ABCs, IVF prn
Labs: CBC, UA, PT/PTT initially and every 2-3 hours if moderate/severe envenomation
wound care
tetanus as indicated
antibiotics if severe tissue involvement
pain control
No ice, incision and suction, or tourniquets

**Antivenin:** Crotalidae Immune Fab Antivenin  (CroFab)
- approved by FDA in October 2000
- sheep-derived, Fab fragments (highly purified)
- 5 times more potent than ACP in an animal lethality model.

2 prospective trials have been performed:

10 years and older were studied
Patients evaluated within 6 hours of snakebite
Mild to moderate envenomations with progression were included
Copperhead bites were excluded

Summary of results:

- early treatment of minimal envenomations with Crofab may prevent the occurrence of more severe effects.
- CroFab is effective in halting progression and scheduled dosing lessens the risk of recurrent local swelling and coagulopathy.
- CroFab appears to decrease the risk of acute allergic reactions and delayed reactions (serum sickness) when compared with the Wyeth product.

Crofab Indications:
Mild to Moderate Crotaline envenomation (rattlesnakes and cottonmouths)
To prevent extension of local swelling
To reverse coagulopathy
To reverse systemic effects

Contraindications:
- dry bite
- hypersensitivity to papaya or papain

Preparation and Infusion:
- No skin test required
- Each vial reconstituted with 10cc sterile water and injected into a bag of 250cc NS (remove 50 cc to make room)
- CroFab reconstituted within 30 minutes vs. > 90 minutes for ACP
- Infuse slowly over the 1st 10 minutes at 25-50 cc/hr, if no allergic reaction then increase to 250 cc/hr
Patient with Indication for CroFab(TM) Administration

Establish Initial Control of Envenomation By Administering 4 - 6 Vials of CroFab(TM)

Initial Control Achieved?

Yes

Infuse Additional 2 Vials Doses at 6, 12, and 18 hours After Initial Control

No

Administer Additional 4 - 6 Vials of CroFab(TM)

Initial Control Achieved?

Yes

No

Administer Additional 4 - 6 Vials of CroFab(TM)

Initial Control Achieved?

Yes

Infuse Additional 2 Vials Doses at 6, 12, and 18 hours After Initial Control

No

Consider Wyeth Antivenom Reconsider Diagnosis

Unanswered questions for Crofab:
CroFab and use in children

CroFab use with copperhead envenomations

Cost-effective? ($775.00 per vial)
- shorten hospital course
- less risk of acute and late reactions

How do I obtain CroFab if my hospital does not stock it?

d) Eastern Coral Snake

- only 1% of bites but fatalities in 9% of cases
- round eyes, no pits, no fangs (must chew to envenomate)
- differentiate from the nonvenomous King snake by the phrase
  “Red on Yellow Kill a Fellow” and the Coral has a black snout (King’s is red)
- venom with very potent neurotoxins that inhibit neuromuscular transmission of
  acetylcholine
- minimal local reaction
- systemic symptoms may be delayed up to 13 hrs.

Signs/symptoms:
- NV, dizziness, diplopia, ptosis, weakness,
  dysphagia, respiratory paralysis, seizures

Admit for 24 hrs. in asymptomatic patients

Therapy: ABCs, wound care, tetanus, analgesics
- Labs unnecessary
  Antivenin early!
  * 4 - 6 vials IV over 1-2 hours, repeat prn
  * do not see rapid resolution of symptoms
  * high risk for serum sickness