Bites and Stings: the venomous truth

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May 24, 2017
Objectives:

- Identify venomous snakes & spiders
- Develop treatment strategies for potential envenomations
- Distinguish limb-threatening from life-threatening envenomations
Question:

• Package # 1: Take a look at the specimen on your table. Identify the specimen and state some of the clinical side effects of its bite.
Latrodectus mactans or hesperus: Black Widow
Spiders

• Black Widow (Latrodectus)
• Common worldwide
  – all species have similar clinical presentation
• North American Species
  – Black widow spider (L. hesperus)
  – Red-backed spider (L. mactans)
  – Brown widow spider (L. geometricus)
  – Red-legged widow (L. bishopii)
Latrodectus geometricus: Brown widow
*Latrodectus bishopi: Redleg Spider*
Latrodectus Bites

- Relatively Aggressive spiders
  - Outhouses, dumps, woodpiles
  - Immediate pinprick
- GI: N/V +/- Cramps
- MS: Muscle spasms, Rigid abdomen
- Peds: seizure or fasciculations
Lactrodectus treatment

• Calcium gluconate?
  – Case review: 163 bites graded 1-3 (severity)
  – 96% of grade 2 & 3 bites required opioids/analgesia after Ca+Gluconate
Question

• Package #2: Look at your spider. Do these spiders live in California?
Hobo Spider
Spiders: necrotic bites?

- Brown Recluse: Loxosceles species
- Reclusive Spliders
  - Woodpiles, cellars
  - Delayed pain
- Local effects: Volcano Lesions
  - NO Ice
- RX: Dapsone, HBO, surgery
  - No Antivenom in US (+ S. America)
Brown Recluse bite at six hours
Brown recluse bite with early central necrosis
Brown Recluse Eschar
Brown Recluse
Question

• Package # 3: You have just been bitten by the specimen on your table.

• Do you anticipate a clinically significant envenomation?
Snakes

- 5000 American bites annually (underreported*)
  - 1/4 are poisonous
- Two indigenous families:
  - Crotalidae (pit vipers)
  - Elapidae (coral)
- Death in 0.5%
  - Often a delay in care
"When you feel the anointing and God moves on you to take up serpents, even if one of 'em lays fangs into you, you shall not be harmed."

~ Jamie Coots
Question

• Package # 4: You have several snakes. Are they all in the same family?
Family Crotalidae

- Crotalids have triangular-shaped heads
- Elliptical pupils (daylight)
- Mobile Front Fangs (retractable)
- Infrared heat-sensing pits ("pit viper")
  – enable them to locate prey
  – guide the direction of strike
  – determine the amount of venom released
- +/- Rattle
- Single row of subcaudal scales
RATTLESNAKES
HAVE BEEN OBSERVED
PLEASE
STAY ON SIDEWALKS
Question

• Package # 5: Snake parts! Please itemize all the distinguishing features of Crotiladadae you can see on these parts.
Copperhead Snake

- Vertical Pupils
- Infrared sensory pit
- Triangular head
Rattlesnakes

• “Hemato-paths”
  – Exception!
  – Mojave ‘two-step”
  – Neurotoxic

• Venom directly injures cells
  – Swelling, ecchymosis, necrosis, pain
  – Coagulation: ↓platelets, ↓fibrinogen =>DIC
Rattlesnake bite at 30 minutes
Rattlesnake bite of the arm
Rattlesnake Bite Management

• Tourniquets?
  - ↓ venom spread (lymphatic)

• Incision and suction?
  - Only in Australia!
  - Oral flora contamination
  - Neurovascular injury

- Only in Australia!
Cardinal Sins of Rattlesnake Rx

1. Inadequate or delayed antivenom
   • Systemic effects
     – Hypotension
     – Confusion
     – Nausea/Vomiting
     – Paresthesias or fasciculations

2. Consulting a surgeon
Size Matters?

- Small snakes more dangerous?
  - Only one dry bite!
  - \( \alpha \) snake size \( \Rightarrow \) ↑ snake severity score (SSS)

- ↑ SSS = ↑ Crofab vials
  - Patient mass did not affect SSS
Question

• Package # 6: Is this a venomous snake?
Coral Snake
Family Elapidae

- Cobras, mambas, coral & sea snakes
- Southern US (colorful)

≈ 200 species: All are highly poisonous

- Tubular fangs: inject by chewing
- "Neuro-paths"

< 0.5% of envenomations
Dangerous?
Bees & Wasps

• Lethal dose of venom?
  – 19 stings/kg
  – 500-1,400 stings per human

• Systemic Toxicity
  – Can be delayed 8-24 hours
  – More likely if >50 stings
    (Africanized bees)
Question

• Package # 7: Name the signs and symptoms that would cause you to administer this medicine.
Anaphylaxis (IgE Mediated)

- Respiratory first
  - Laryngeal Edema
  - Bronchospasm
  - Stridor
- Circulatory collapse
  - ↓ Blood pressure, arrhythmias, arrest
- Cause of most sting deaths
  - Usually only 1-2 stings (onset 10-30 min)
  - 50/yr
Africanized Honey Bees

• “Killer Bees” = ↑ # of stings
• Personality problem = swarming
• Venom symptoms:
  – Nausea
  – Vomiting
  – Headache
Yellow jackets

• Solitary attack, ground nest
• Can swarm, but not in massive #s
In U.S. by 1988

Killer bees getting closer

By CHARLES W. HELL.

Ann Arbor, Mich. (UPI) — So-called killer bees from South America will cross into the United States by 1988 even if the U.S. government carries out a proposed full-scale battle to stem their invasion, entomologist Orley R. Taylor says.

Taylor, an entomologist from the University of Kansas, told 1988 and 1994."

But Taylor said Americans should not panic as the bees get closer, despite recent stories that they can cause a wave of death to humans and animals.

"It's not like some science fiction scare story," he said. "Not all of them are aggressive all the time, and there's nothing to suggest they are a narrow Isthmus of Panama to genetic and chemical warfare."

Taylor said he doubted anything would completely stop the bees.

The bees, a strain originating in South Africa, began swarming north in 1987 after their escape from a Sao Paulo research station.

Taylor said experts have
Summary

- Avoid concentrating venom
  - NO ice, NO constriction
- Identify Crotalids
  - Triangle Head, Rattle
- Rattlesnake bite = Antivenom
- Stings: Recognize anaphylaxis
- Stay alive, get inside!
Questions?
Please feel free to come look at the more fragile specimens during the break

- Rattlesnake skull
- Western Diamondback snake specimen


