Bee Stings in Arizona

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Disclosures

• Nothing to disclose
Who is the AZPDIC?

- Physicians / Pharmacist / Nurse: 24/7/365
- 1- Clinical Care: 14 counties 72 hospitals
  - Medications / chemicals / radiation
  - Drugs of abuse
  - Environmental / occupational
  - Bites & Stings / plant / mushrooms
  - Exposure during pregnancy / lactation
- 2- Public Health: surveillance / education
- 3- Clinical Education: students / residents
- 4- Research:
Hymenoptera:

- Phylum: Arthropoda
- Class: Insecta
- Order: Hymenoptera
  - Family: Vespidae: wasps, hornet
  - Family: Formicidae: Ants
  - Family: Apidae: Bees

Bumblebee
Phylum: Arthropoda

Subphylum: Chelicerata
- Class: Arachnida
  - Spiders, Scorpions
    - Order: Scopiones
      - Genus: Latrodectus
    - Order: Araneae
      - Genus: loxosceles

Subphylum: Myriapoda
- Chilopoda
  - Centipedes

Subphylum: Hexapoda
- insecta
  - hymenoptera
  - Ants, Bess, Wasps, A
Terms: European – African honey bee hybrid

- Phylum: arthropoda
- Class: insecta
- Order: Hymenoptra
- Genus: Apis
  - Species: A. mellifera
    - Subspecies: A M Hybrid

Africanized bee

African honey bee
*Apis mellifera scutellata*

Italian bee
*Apis mellifera ligustica*

Western honey bee
Bees!

- Order Hymenoptera
- Family Apidae
- Bumble bee (*Bombus*)
- Honey bee (*apis mellifera*)
- Africanized or “swarming” (*a. m. scutuletta*)
Killer Bees!

- Brought to Brazil
- Escaped in 1957, headed north
- Texas October 1990
- Phoenix October 1993
- Aggressive, defensive
Massive bee Envenoming:

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Clinical Research Study

Honeybee Stings in the Era of Killer Bees: Anaphylaxis and Toxic Envenomation

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Injury from massive bee envenomings:

• Related to the behavior of the bees:
  • Closer to the hive the more stings (100 feet distance → 1/10 stings)
  • Bees will go into any cavity
  • Corneal abrasions

• Related to human behavior:
  • long pants and long sleeve shirt
  • Hat with bee net
  • Light-colored clothing
  • Avoid floral scents

• Related to venom:
During 2000–2017, a total of 1,109 deaths from hornet, wasp, and bee stings occurred, for an annual average of 62 deaths. Deaths ranged from a low of 43 in 2001 to a high of 89 in 2017. Approximately 80% of the deaths were among males.
Stinger in the Rear

- Barbed stinger 1.6 mm long x 0.05 mm
- Connected to a venom sac
- One and done
- Causes evisceration
Venom

- A mixture of multiple compounds
- 85 % water
- Dry weight
  - Melitin 50-60% 10-12 %  * Pain
  - Phospholipase A₂ 10-12 %  * allergenic
  - Peptide 401  1-3 %
  - Hyaluronidase  1-3%
  - Apamine  1-3%
  - Adolapin  0.1-0.8 %
  - Secapins  1-3 %
  - Histamine
  - Adrenalin
- Relative composition varies by time of year

Pucca MB et. al Bee Updated: Current Knowledge on Bee Venom and Bee Envenoming Therapy Front. Immunol., 06 September 2019
Ouch!

- Local reaction
  - Pain
  - Erythema
  - Swelling
  - Pruritis
  - 1-5 cm
- Self-limiting
Ouchius Maximus

- Envenomation
  - GI symptoms
  - Rhabdomyolysis
  - Cardiac injury
  - Renal failure
  - Fever
  - Syncope
  - ARDS
  - MSOF
- > 50 stings
Ouchiest!

- Anaphylaxis
  - Urticaria, flushing, angioedema
  - Airway edema, hoarsness, wheeze, respiratory distress
  - Hypotension, shock
  - Rapid onset

- Not related to number of stings
What to do

- ABCs
- Treat anaphylaxis if needed
- Decon
- Pain control
- Remove stingers
- > 50 stings needs eval in the ED
In the ED

- Decon
- Thorough skin survey
- CBC, CMP, PT/INR, CK, Troponins, UA, EKG
- Check for corneal abrasion
- Check the cavities if passed out.
- Pain control
- IVF
- Observation
Avoid and Escape

- Leave them be
- Light-colored clothing
- Avoid floral scents
- RUN!
- Cover face
- They will wait for you to exit water
- Seek shelter