Animal Bite Assessment and Treatment
Greg Friese, MS, NREMT-B
Randal F. Wojciehoski, DPM, DO

Introduction

Case study

Picture has been removed
Objectives

- Identify types and causes of animal bites
- Predict adult and pediatric injury patterns from animal bites
- Explain animal bite assessment guidelines
- Review animal bite treatment strategies
- Discuss animal bite complications

Objective 1
Identify types and causes of animal bites

US Pet Population
- 50 million cats and dogs
- Most childhood bites are from the family pet
- 80-90% of bites are from dogs
Dog Bite

- Any breed can bite
- Large breeds
  - Popular family pets

10-30% of bites to head and neck

Cat Bite

- 10% of animal bites
- 75% of bites to extremities
- Less bite pressure
- Puncture wounds inoculated with bacteria
Ferrets, Rats, Mice, Gerbils, Hamsters, and Guinea Pigs

- 2-5% from rodents
- 5-8% from small domestic and wild mammals

Bats

- Leading transmitter of rabies
- Victim often unaware of bite

Large Predators
**Large Predators**
- Grizzly bear—severe and sudden
- Black bear—usually minor injuries
- Assess as major trauma and treat appropriately

**Animal Bite Frequency**
- 4.5 million emergency department visits
- 50% of bites likely go unreported
- Children require medical attention more often
- EMS treats the most severe and the most trivial

**Timing**
- More children outdoors
- More dogs outdoors
- Unsupervised physical play
Causes

“Rover has always been great with the kids”

“Kitty has never clawed any of us before”

“They were roughing housing. I heard a sharp bark, and a scream”

“Little Billy has pulled on the dog’s tail hundreds of times”

---

Causes

Provoked bites
- 1/3 of bites
- Threatening, antagonizing, inflicting pain, or violating boundaries

---

Causes

Unprovoked bites
- Approaching an animal or its young
- Approaching an animal that is eating
- Approaching a rabid animal
Causes

- Defending food, toy, or owner
- Being startled
- Fatigue or illness

Large Predator Attacks

- Sudden
  - Flee
  - Stand its ground
  - Attack
- Human provoked
- Stalking

Objective 2

Predict adult and pediatric injury patterns from animal bites
Adult Injury Patterns

- Most bites to extremities
- Larger relative to the dog
- Use extremities to defend

Pediatric Injury Patterns

- More head and neck bites
- Same size or smaller than dogs
- Face is at dog’s level
- Less able to self-defend

Animal Bite Wounds

- Avulsions and amputations
- Lip
- Ear
- Nose
- Digits
- Extremities
Animal Bite Wounds

Punctures
- Ideal infection environment
- Unlikely to seek treatment
- Adults—extremities
- Children—head or neck

Animal Bite Wounds

Crush Injury
- Damage to underlying tissue, vessels, and bones

Immediate Consequences
- Death—10 to 20 per year
- Initial assessment problems
- Wounds and fractures
**Delayed Consequences**

**Infection**
- 50% of cat bites
- Extremity wounds are higher risk
- Prevention—appropriate wound cleaning and closure

**Objective 3: Assessment**

Assessment guidelines for animal bites
Scene Safety
- Responder safety is #1
- Animal—controlled or loose?
- Request additional resources

MOI/NOI
- Gather clues
- MOI predicts injury patterns

Initial Assessment
- Airway
  - Open
  - Suction as needed
- Breathing
  - Ventilate if indicated
  - Recognize hyperventilation from anxiety
- Circulation
  - Severe bleeding
  - Well-aimed direct pressure
Focused Physical Exam

- After addressing critical system problems
- Isolated bite—examine the:
  - Wound
  - Underlying bone, tissue, and vessels
  - CSM distal to the wound

Head-to-Toe Physical Exam

- Indications
  - Patient is not awake
  - Can not describe events
  - Complains of multiple injuries
  - Check for DCAP-BTLS

Head-to-Toe Physical Exam

- Head—puncture wounds
- Airway compromise
- Avulsions
- Monitor facial swelling
- Neck—puncture wounds
- Severe bleeding
Patient bit by the neighbors dog

Patient wandered into neighbors yard. Dog charged patient. Patient attempted to deflect dog with arm. Dog bit patient’s right arm and pushed patient over. Patient hit head on driveway. Dog was on patient’s chest continuing to bite until the patient was able to free arm and flee.

Additional History

- Type of animal
- Provoked or unprovoked
- Animal’s behavior—play, stalking
- Signs of illness
- Animal’s health
- Time of day
- Animal ownership, current location, rabies vaccination status
Objective 4: Treatment

Review treatment strategies for animal bites

ABCs

Treat and monitor threats to:
- Airway
- Breathing
- Circulation
**Bleeding Control**

RE-AIM WELL AIMED DIRECT PRESSURE
WELL AIMED DIRECT PRESSURE
EXPOSE

**Shock (hypovolemia)**

- **Signs**
  - Increasing pulse
  - Increasing respiratory rate
  - Pale, cool, clammy skin
  - Altered mental status
  - (children compensate longer than adults)

- **Treatment**
  - Stop fluid loss
  - High flow oxygen
  - IV fluid replacement
  - Keep patient calm, warm, and comfortable

**Wound Cleaning**

- Scrub with soap and water
- Pressure irrigation
- Copious amounts of water
**Wound Cleaning**

- Mechanical action washes away debris
- Remove foreign bodies with forceps
- Consider debridement

**Wound Cleaning**

- Povidone iodine rinse
- Dry sterile dressing

**Wound Closure**

- Prehospital wound closure is NOT recommended
- General principles
  - Return partially avulsed skin flaps to normal anatomic position
  - Do not complete partial avulsions or amputations
  - Lay dry sterile gauze to fill the void created by an avulsion or gaping laceration
  - Bandage with a loose dressing
  - Splint wounds to minimize further injury
Non-pharmacological Pain Treatment

- Recognition and Empathy
- Distraction
- Transport in position of comfort
- Well padded splints
- Adjust ambient temperature to comfort

Transport Priority & Destination

- Airway and breathing compromise
- Impaired central nervous system function
- Damage and hemorrhage to great vessels
- Signs of shock from significant blood loss
- Significant tissue or appendage avulsion
- Multi systems trauma
- Multiple extremity fractures

Treatment Refusal

- Damage to underlying tissue or bone
- Infection, including rabies
Objective 5: Complications

Discuss animal bite complications

http://www.cdc.gov/mmwr/preview/mmwrhtml/mm5350a1.htm

Infection

Local Infection: Symptoms

- Pain, redness, warmth, swelling at wound site
- Pain with movement
- Lymph node swelling
- Foul smelling discharge
Local Infection: Treatment

- Reopening and recleaning the wound
- Copious irrigation
- Topical or oral antibiotics

Systemic Infection: Symptoms

- History of a local infection
- Red streaks
- Fever
- Altered mental status
- Hypovolemia
- Cardiac and respiratory compromise

Systemic Infection: Treatment

- Support ABCs
- IV therapy
- Monitoring vital signs
- Detailed wound history
- Rapid transport
Systemic Infection

- Document spread of infection
- Time and date

Picture has been removed

Rabies

- Viral infection
- 100% fatal
- Vaccination programs have reduced incidence
- 41 human deaths, 1980-2000

Picture has been removed

Rabies: Signs and Symptoms

- Appears sick or crazed
- Nocturnal animal seen during the day
- Abnormal behavior

Picture has been removed
Rabies: Signs and Symptoms

- Initial—pain, tingling, itching
- Fever, chills, muscle aches, fatigue
- High fever, altered mental status, seizures

Mandatory Reporting

Be familiar with and follow local reporting procedures

Injury Prevention

1. Do not approach an unfamiliar dog
2. Do not run from a dog and scream
3. Remain motionless "be still like a tree" if you are approached by an unfamiliar dog
4. If knocked over by a dog, roll into a ball and lie still
5. Do not play with a dog unless supervised by an adult
6. Immediately report stray dogs or dogs displaying unusual behavior to an adult
7. Avoid direct eye contact with a dog
8. Do not disturb a dog who is sleeping, eating, or caring for puppies
9. Do not pet a dog without allowing it to see and sniff you first
10. If bitten, immediately report the bite to an adult
Summary

- Children are more likely to receive severe bites to the head and neck.
- The animal is usually known to the victim.
- Assess bites as blunt and or penetrating trauma.
- Wound cleaning is more important than wound closure.
- Prevent and monitor for signs of infection.
- Physician evaluation is indicated for any bat bite or scratch, observable or not.

Credits

Greg Friese is the founder and president of Emergency Preparedness Systems LLC. He founded EPS to deliver innovative and efficient emergency preparedness solutions. Greg is an EMS instructor and search dog handler.

Randal F. Wojciehoski, DPM, DO is an emergency department physician, former EMS medical director, and a frequent speaker and author on emergency medicine.

References