



Learning Objectives

By the conclusion of this session, participants should be able to: 1) Identify the types of dogs commonly implicated in severe attacks on children, 2) Identify the types of pediatric neurological injuries that may result from a dog attack, 3) Discuss the medical and surgical management of dog bites in children resulting in neurological injury

Introduction

The authors describe a series of dog attacks on children which required neurosurgical consultation, in order to better understand the pattern of injuries inflicted, the circumstances that place children at risk of attack, and the dog breeds involved.

Methods

We performed a retrospective review of all children requiring neurosurgical consultation for dog bite at a level-one pediatric trauma center over a 15 year period.

Results

Seventeen children incurred injuries requiring neurosurgical consultation. Mean age at the time of attack was 30 months. Eleven (65%) of the attacks were perpetrated by the family pet and 12 (71%) took place at the patients' home. Breeds involved in the attacks included German Shepherds, Pit Bulls, American Bulldogs, large-mixed breeds, Labrador Retrievers and Akitas, with German Shepherds being the most frequently involved.



Depressed, comminuted skull fracture in a 6 month old child after an attack by the family's American Bulldog.

Neurosurgical injuries included non-depressed skull fracture in 5, depressed skull fracture in 10, intracranial hemorrhage in 5, cerebral contusions in 4, dural laceration in 4, pneumocephalus in 5, clinically evident cerebrospinal fluid leak in 3, spinal fracture with complete spinal cord injury in 1, stroke in 2, vascular injury in 2, and Cranial nerve injury in 1. Only one patient had confirmed infection involving the site of injury. Neurosurgical intervention was required in 10 patients (59%). Neurological deficits, all of which were considered catastrophic, developed in 3 patients (18%).

Conclusions

Dog attacks on children requiring neurosurgical consultation commonly involve the family pet, which is usually a large breed dog with no history of prior aggression. Neurosurgical injuries often involve the cranial vault, with depressed skull fractures being the most common injury pattern. Most patients do not suffer a neurological deficit, though catastrophic neurological injury may occur. Prophylactic antibiotics are commonly used and surgical intervention is required in the majority of cases.

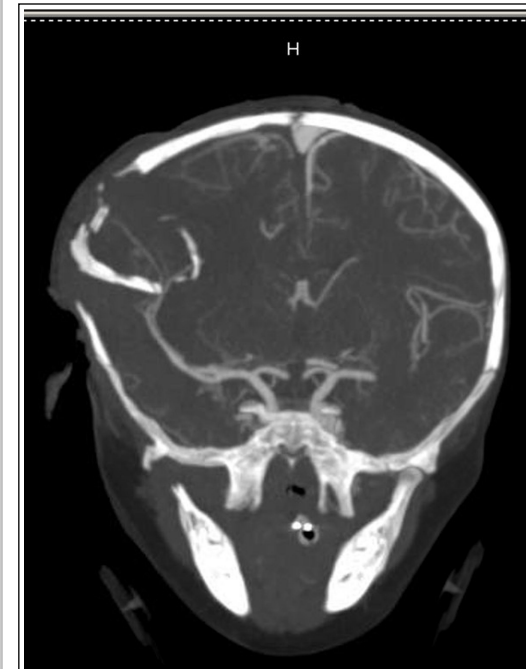
Key References

Calkins CM, Bensard DD, Partrick DA, Karrer FM: Life-threatening dog attacks: A devastating combination of penetrating and blunt injuries. J Pediatr Surg 36:1115-1117, 2001

Garvey EM, Twitchell DK, Ragar R, Egan JC, Jamshidi R: Morbidity of pediatric dog bites?: A case series at a level one pediatric trauma center

Nonfatal dog bite-related injuries treated in hospital emergency departments--United States, 2001.:MMWR Morb Mortal Wkly Rep 52:605-10, 2003

Steen T, Ravin K, Timmons S, Kershenovich A: Intracranial Injuries from Dog Bites in Children. Pediatr Neurosurg 50:187-95, 2015



A 9 month old boy was attacked by an American Bulldog. A CT angiogram shows a large depressed skull fragment transversing across several M3 branches of the right middle cerebral artery. The lower image shows the large scalp defect which was initially covered with Alloderm®, placed over a synthetic dural patch