

CASE REPORT

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Fatal Dog Maulings Associated With Infant Swings

ABSTRACT: We present three cases of fatal dog maulings of infants placed in mobile infant swings, a phenomenon not previously described in the literature. In each case, the victim was left in a mobile swing, unsupervised by an adult, and the attacking dog was a family pet. Case 1 involved an 18-day-old male infant attacked by a pit bull; Case 2 involved a 3-month-old male infant attacked by a Chow Chow and/or a Dachshund, and Case 3 involved an 18-day-old female infant attacked by a Labrador-pit bull mix. These cases not only underscore the importance of not leaving young children unattended in the presence of pet dogs, but also raise the possibility that mobile swings may trigger a predatory response in dogs and thus may represent an additional risk factor for dog attack.

KEYWORDS: forensic science, dog, infant, swing

In this report, three cases of dog-bite-related fatalities in infants that had been placed in mobile infant swings are presented. Also included is a review of the existing literature on the epidemiologic, forensic, and behavioral aspects of dog-bite-related fatalities, and a potential mechanism by which fatal dog maulings associated with infant swings occur.

Case # 1

In August 2003, in Baltimore, MD, a 2½-week-old male infant was left in a wind-up swing in a second story bedroom by the parents, who went outside to smoke cigarettes. The family dog, a 1-year-old male pit bull named "Jigga" (Fig. 1A), remained in the room with the infant. Upon their return, the parents discovered that the swing was overturned and the infant was out of the swing and on the floor, unresponsive, with bite marks to the body and face. Scene investigation revealed that the swing had been moved to the top of a bed during resuscitative efforts, but had originally been placed to the side of the bed. An open Tupperware-type container of dog food was near the foot of the bed, approximately 6 ft from where the swing had been located. After the attack, the dog was secured to a fence with a harness but was able to get free and charged toward a police officer. Officers responded by shooting the dog. The dog was brought to the medical examiner's office for external examination and bullet recovery. Autopsy of the in-

fant revealed multiple injuries, including multiple (over 275) punctate contusions, abrasions, lacerations, and puncture wounds of the head, torso, and legs, extensive subgaleal hemorrhage, fracture of the left frontal and parietal skull, subarachnoid hemorrhage of the brain and spinal cord, epidural hemorrhage of the spinal cord, multiple bilateral anterior, and posterior rib fractures (all ribs on the left and ribs 2–12 on the right), contusions of the lungs, heart, colon, and small bowel mesentery, lacerations of the liver, and hemoperitoneum (Fig. 1B). Injuries were consistent with attack by the pit bull submitted for autopsy.

Case # 2

In October 1999, in Sparrow's Point, MD, a 3-month old male infant was asleep in a wind-up swing when his parents went to bed in a separate bedroom. Three hours later, the mother woke and, upon checking the infant, found him on the floor unresponsive with the swing tipped over. The family dogs that were present, an 8-year-old female Chow Chow named "Sandy" and a 9-year-old female Dachshund named "CoCo," were removed by Animal Control and euthanized. The dogs were not available for bite-mark comparison. The Chow Chow had blood on her fur and the Dachshund did not. Scene investigation (Fig. 2A) revealed an overturned swing in the kitchen area of the apartment with blood on the floor and a dog bowl with dog food nearby. Autopsy revealed multiple injuries consistent with attack by a medium- to large-sized dog (most likely the Chow Chow), including numerous contusions, abrasions, lacerations, and puncture wounds of the head, neck, torso, and extremities (over 300), laxity and laceration of the ligaments of the atlanto-occipital joint, fracture of the right temporal and parietal skull, mandible, left clavicle, and multiple ribs primarily on the left side, rupture of the spleen and left kidney, laceration of the liver, and contusions of the lungs (Fig. 2B).

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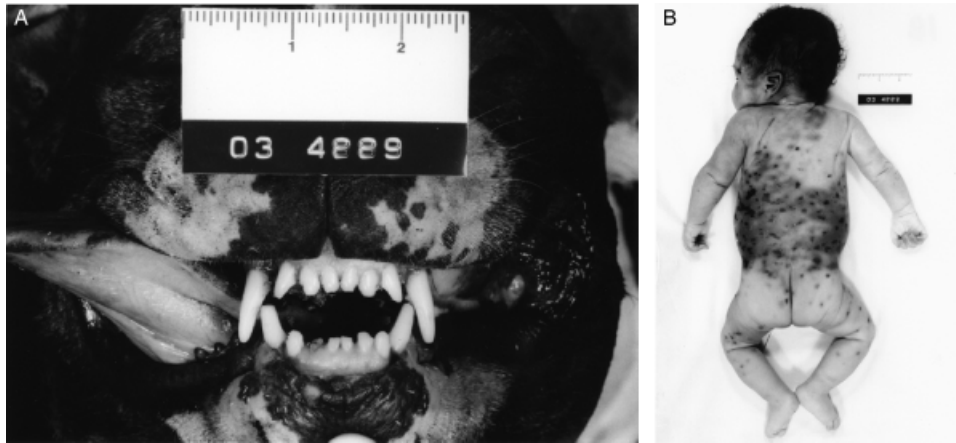


FIG. 1 (A) Autopsy facial photo of pit bull from Case # 1. (B) Autopsy photographs from Case # 1, showing multiple contusions, puncture wounds, abrasions, and lacerations typical of a dog attack.

Case # 3

In June 2000, in St. Petersburg, FL, a 2 $\frac{1}{2}$ -week-old female infant was placed in an infant swing by her mother, who went to the kitchen to prepare a bottle for the child. According to the mother, this was her first time using the swing. Upon her return several minutes later, she found the infant in the swing, crying and bleeding from injuries to the head. The family dogs, a 12-year old male Labrador-husky mix named "Bear" and a 1-year-old male Labrador-pit bull mix named "Malachi," were sitting on the floor next to the swing; both dogs were later taken into custody by Animal Control. Postmortem examination of the infant revealed multiple lacerations and puncture wounds of the head, skull fracture, subdural hematoma, subarachnoid hemorrhage, multiple cortical contusions, and intraventricular hemorrhage. Bite mark

analysis performed on the dogs by a forensic odontologist revealed that the younger Labrador-pit bull mix was most likely responsible for the attack.

Discussion

Dog bite-related fatalities are rare events. Between 1979 and 1998, there have been 331 known dog-bite-related fatalities in the United States (1-3); however, as no national registry of such incidents exists, this figure likely is an underestimation of the true number. A review of cases in the state of Maryland from 1990 to the present reveals four total cases of dog-bite-related fatalities in children less than 5 years of age. In contrast to the fatal variety, nonfatal dog bite incidents are thought to be relatively common. It

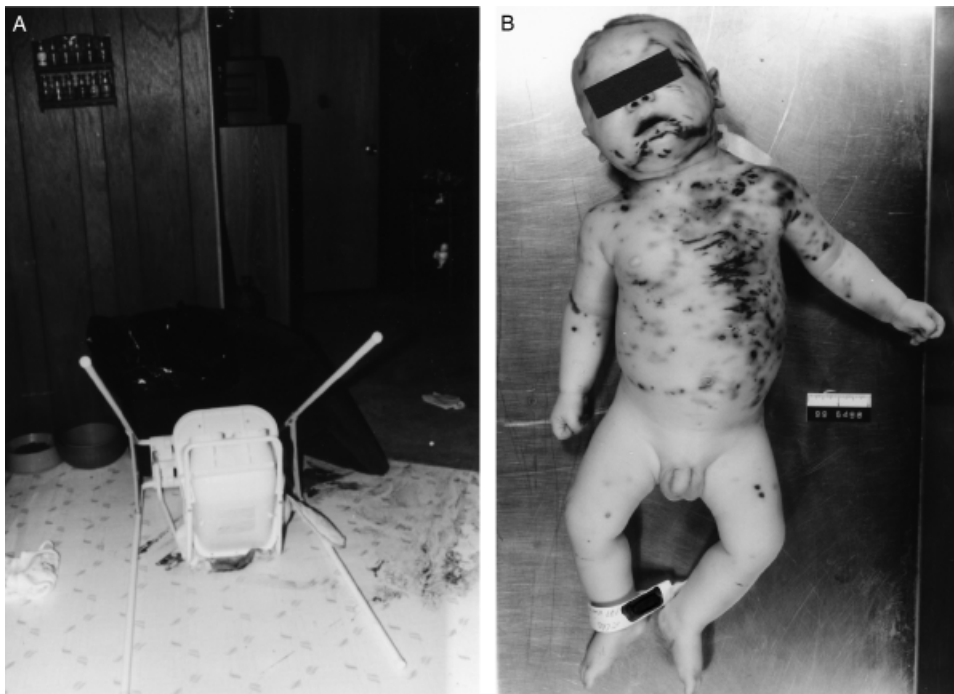


FIG. 2 (A) Overturned swing from scene of Case # 2. (B) Autopsy photograph from Case # 2, showing multiple contusions, puncture wounds, abrasions, and lacerations typical of a dog attack.

has been estimated that for each dog-bite-related fatality, there are approximately 16,000 emergency room visits and 670 hospitalizations (4). Because a significant proportion of dog bite victims do not seek medical attention (5), however, the true incidence of all dog bite attacks is unknown.

Major risk factors for dog-bite-related fatalities include age of the victim, location of the attack, presence or absence of restraints, and breed of the attacking dog. It has been reported that 60–70% of all dog bites occur in children (6), with those between the ages of 5 and 9 years at the highest risk of nonfatal bites (7). At highest risk for *fatal* attacks, however, are those who are least able to defend themselves—children less than 5 years of age and the elderly (1,8). Contrary to the popular fear of the vicious roaming stray dog, the majority of fatal attacks involve pets that are known to the victim, with the family dog implicated in nearly 70% of attacks and three quarters of attacks occurring on the dog owner's property (3,9), often without any known provocation. Not surprisingly, most attacks involve unrestrained dogs, regardless of location.

Dog breed as a risk factor for fatal attacks has received the most public attention, with some local jurisdictions enacting statutes restricting ownership of certain breeds that are thought to be more likely to exhibit aggressive behavior. In a retrospective study of dog-bite-related fatalities occurring in the United States between 1979 and 1998, Sacks et al. (3) reported that the top three breeds most frequently involved in fatal attacks were pit-bull-type, rottweiler, and German shepherd. Attempts to further characterize any association between a particular breed and fatal attacks, however, are limited in several ways. In addition to the aforementioned lack of a dog bite registry in this country, no breed-specific population estimates exist; without this denominator, no breed-specific incidence rates of fatal attacks can be calculated and compared with one another. Additional complicating factors include inaccurate or incomplete collection of data regarding breed and uncertainty as to how to analyze data from mixed-breed attacks or attacks involving multiple dogs. Given these issues, the safest conclusion is that under a given set of circumstances, a dog of any breed may be involved in a fatal attack.

Other risk factors for dog bite attacks that have been described include a history of aggressive behavior in the attacking dog, male gender of both the dog and the victim, and whether the dog had been spayed or neutered (both believed to decrease the likelihood of fatal attacks) (4,10). By report, in all three cases, there was no prior history of aggression in the dogs implicated in the attacks. The dog in Case # 1 was not neutered and this history in the other dogs was unknown.

The pattern of injuries typically seen in fatal dog attacks is a result of both dog- and victim-related characteristics. Dogs have 42 teeth (20 upper and 22 lower), and can generate vertical force greater than 450 psi (11,12). Because of the configuration of the canine jaw, a combination of puncture wounds from the canine teeth and lacerations and/or abrasions from the incisors may be seen. Bite marks may be so numerous, however, that discrete bite marks may be difficult to discern. Additional injuries, including blunt force injuries, may occur because of the severe shaking, crushing, and twisting that occur after the initial bite. Most fatal injuries involve the head and neck, including asphyxia because of compression of the larynx and exsanguination because of injury of major blood vessels (11,13,14). If the victim is upright, initial bites may be directed to the back of the legs (15). Defensive injuries and claw marks (superficial linear abrasions) may also be seen.

While the cause of death may be readily apparent in cases of fatal dog attacks, an understanding of how and why the attack occurred requires a complete investigation. As with any death

investigation, information (including photographs and collection of trace evidence, if applicable) should be gathered at the scene. Scene investigation may be the best (or only) opportunity to document the breed of the dog. Information on whether the attack was witnessed, the relationship of the dog to the victim, presence or absence of restraints, any history of aggressive behavior, may be helpful in elucidating the reasons for the attack. The examination of the victim should include identification of bite marks and defensive injuries. If the suspected attacking dog is available for examination, comparative bite mark analysis can be performed; examination of the oral and stomach contents of the dog may reveal tissue from the victim. Toxicologic analyses may be performed if desired, and tissue may be submitted for microbiological analysis to rule out rabies and other infectious processes.

While the behavioral aspects of dog attacks on humans are not fully understood, attempts have been made to attribute the underlying cause of such events to the innate behavior of dogs and their interactions with humans. Believed to have descended from wolves thousands of years ago (16), dogs have retained the pack instinct of their ancestors and remain social animals; it is for the beneficial aspects of these inherited characteristics that dogs have earned the moniker of "man's best friend." It is the social behavior of dogs, however, that is also thought to underlie certain types of aggressive behavior.

Canine aggression in dogs is a well-described behavioral phenomenon and has been subdivided into various types (6,15,17). Dominance aggression is thought to arise directly from the social hierarchy of the wolf pack, and manifests itself when a dog attempts to assert its social position by exhibiting aggression toward a newer or lesser member of the "pack," e.g., a newborn infant. This form of aggression likely underlies many attacks on young children and cannot be excluded as a contributing cause in any of the cases described in this report. Possessive aggression is manifested when the victim attempts to remove an object that "belongs" to the dog, e.g., food dish or toy. In the first two cases of this report, open containers of dog food were present in the room where the attacks occurred. As no attempt to remove or otherwise manipulate the dog food was made in either case, the possibility that possessive aggression caused these attacks is less likely, although the proximity of the dog dish to the swing in each case prevents us from excluding it entirely. Territorial, or protective, aggression refers to aggressive behavior directed against an intruder or a perceived threat to the pack. Pain-elicited aggression includes not only aggressive behavior in response to deliberately inflicted pain, but also aggression that results from attempts to touch a sick or injured dog. Redirected aggression has been described in the context of victims who have been attacked while attempting to break up a fight between two or more dogs. Territorial/protective, pain-elicited, and redirected aggression do not appear to be factors in the cases discussed in this report.

Predatory aggression refers to the instinctual drive to chase, catch, and kill prey (15). Because it represents "hard-wired" behavior, it differs from other forms of canine aggression, which are partially learned and arise from the surrounding environment. A distinguishing feature of predatory aggression is that it is usually triggered by movement, often with little change in the dog's mood; common examples of this phenomenon would include dogs that chase moving cars or balls. In each of the attacks described in this report, an infant was in a mobile swing. We hypothesize that the motion of the mobile infant swings, through the mechanism of predatory aggression, may provoke a predatory response to the infant in the swing. It may be difficult, however, to assess the contribution of predatory aggression

(vs. other forms of aggression) in the initiation of these attacks, particularly when they are unwitnessed as in the cases described above. Regardless of the triggering mechanism, these cases clearly illustrate the importance of adult supervision when young children are in the presence of dogs.

In conclusion, we report three cases of fatal dog bite attacks in which infants were left unattended in mobile wind-up swings in the presence of trusted household pets. These cases not only underscore the importance of not leaving young children unattended in the presence of pet dogs, but also raise the possibility that mobile swings may trigger a predatory response in dogs and thus may represent an additional risk factor for dog attack.

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