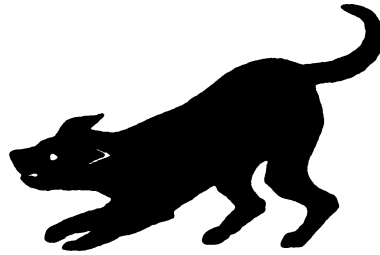


Human Deaths Induced by Dog Bites, United States, 1974-75



WILLIAM G. WINKLER, DVM

HEALTH ASPECTS of pet ownership have expanded in recent years beyond the classic concerns of rabies and larva migrans to problems such as the trauma associated with bites and the fecal pollution and even noise pollution attributed to pets (1). The scientific literature contains no data on the frequency or epidemiology of human deaths associated with pet bites. Since no specific surveillance of dog bites is maintained at the national level, probably neither health officials nor practicing physicians are aware of the frequency with which bites are fatal for the victim.

The frequency of these fatalities should be examined to determine if the magnitude of the problem warrants the establishment of preventive programs and to ascertain if specific causative factors can be identified and eliminated, thereby reducing the number of deaths.

This report describes 11 deaths from dog bites that occurred in the United States during the 2 years from January 1974 through December 1975. The data were acquired from news releases, personal communications with health and police officials, and newspaper morgues. Although the lack of

comprehensive surveillance makes it impossible to ascertain how many persons actually die of the trauma associated with dog bites in this country each year, these 11 cases undoubtedly represent only a portion of the actual number that occurred during the reporting period.

Case Histories

Case 1. The victim, a 4-year-old boy, and a neighbor's child were playing in the neighbor family's fenced yard. The mother of the neighbor child was babysitting with the two children, but she left them unattended for a short time. During her absence the neighbor family's dog, an adult male St. Bernard, escaped from its pen in the yard and attacked the visiting child. Death, attributed to multiple injuries and exsanguinating hemorrhage, occurred in less than 2 hours. The attack occurred about 9 am and was not observed by competent witnesses (see table).

Case 2. The victim, a 6-year-old boy, was playing with a neighbor's 6-year-old in the den of the neighbor's home. In play, the boy ran to another room and back into the den past the neighbor family's

recumbent St. Bernard dog and in the general direction of a playpen containing the neighbor's 8-month-old baby. The dog jumped up and attacked the victim. The mother of the family, responding to the children's cries, was unable to free the child from the dog's grip. She then secured a gun and fatally shot the dog. The attack occurred about 2 pm. The child died of multiple lacerations and hemorrhage within the hour. The dog and the victim were well known to one another, and no antagonism had ever been noticed; the dog was not regarded as vicious before this attack.

Case 3. A 5-year-old boy was fatally bitten on the head by a neighbor's German shepherd which broke a restraining chain to attack the victim when he threw rocks at it. The dog was chained in its owner's yard. The child died en route to the hospital. No other information was available concerning this case.

□ *Tearsheet requests to William G. Winkler, DVM, Chief, Respiratory and Special Pathogens Branch, Bureau of Epidemiology, Center for Disease Control, Atlanta, Ga. 30333.*

Epidemiologic factors in 11 fatal dog bite cases, January 1974–December 1975, United States

Case No.	Attack factors		Victim's sex and age	Dog factors			Cause of death
	Date and time	Setting		Breed	Sex and age	Ownership	
1.	April 1974, 9 am	Urban, Indiana	Male, 4 years	St. Bernard	Male, age unknown	Neighbor	Multiple injuries, exsanguinating hemorrhage
2.	April 1974, 2 pm	Urban, New York	Male, 6 years	St. Bernard	Male, 4 years	Neighbor	Multiple lacerations, hemorrhage
3.	July 1974, 3 pm	Urban, Maryland	Male, 5 years	Shepherd	Male, 5 years	Neighbor	Head and neck injuries
4.	September 1974, unknown	Rural, New York	Male, 7 months	Dachshund	Unknown, age unknown	Victim	Unknown
5.	November 1974, 2 pm	Rural, Missouri	Male, 5 years	Pack, 3	Male, age unknown	Neighbor	Multiple head, neck, and body wounds
6.	January 1975, 12:30 pm	Urban, Missouri	Female, 5 months	Basenji	Female, 3 years	Victim	Tissue loss from abdominal and inguinal regions, hemorrhage
7.	March 1975, unknown	Rural, Missouri	Female, 75 years	Collie-shepherd	Unknown, 7 years	Victim	Neck lacerations
8.	May 1975, 11:30 am	Urban, Texas	Male, 2 years	Shepherd	Male, 4 years	Victim	Abdominal lacerations, hemorrhage
9.	June 1975, 1 pm	Rural, Minnesota	Female, 3 years	Husky	Male, age unknown	Neighbor	Neck punctures
10.	August 1975, 9:30 am	Urban, Nevada	Male, 5 years	Pack, 7	Male, female, 5 months	Neighbor	Multiple lacerations
11.	August 1975, 6 pm	Rural, Ohio	Female, 17 years	Great Dane	Male, 3 years	Neighbor	Neck injuries

Case 4. A 7-month-old boy, lying on a bed in his house, was left by his mother who stepped out "for a few minutes." She returned to find that the child had been attacked by the family's recently acquired dachshund. The baby died several hours later. The attack was not observed by witnesses, and no other information was available.

Case 5. A 5-year-old boy left his house after lunch to play alone in his unenclosed backyard. Approximately 45 minutes later, when the child did not respond to her call, his mother went into the yard and discovered the boy's

body under some bushes. Bits of bloody clothing were scattered about the area. Three neighborhood dogs, a Labrador retriever and two mixed breeds, were running around the victim's body and about the yard; at least one dog had a bloody face. The boy was taken immediately to a hospital, where he was pronounced dead on arrival. The victim's pet bitch, in estrus, was confined at the time of the attack in a backyard shed.

Case 6. A 5-month-old girl was placed on a sleeping pad on the dining room floor by her mother, who subsequently fell asleep in an adjacent room. Several feet from the infant was a nest box

containing the family's Basenji and her litter of week-old pups. The child's father entered the room sometime later to find the Basenji bitch standing over the infant's body. The child was taken to a local hospital, where she was pronounced dead on arrival. No witnesses observed the attack.

Case 7. A 75-year-old woman was attacked in her home by the family pet, a collie-shepherd mixed breed. The victim's husband entered the room in time to see the dog knock the woman down and begin attacking her throat. The husband was bitten while pulling the dog away. The victim died almost instantly from exsanguinat-

ing hemorrhage and lacerations of the neck.

Case 8. A 2-year-old boy was playing in his house when the family's German shepherd, chained in the backyard, broke the chain, tore through the screen door, and attacked the child. Massive laceration of the liver resulted in sudden exsanguinating death.

Case 9. A 3-year-old girl wandered from home about 11 am and was found dead about 2 pm, entangled in the chain of a small, bloody, husky-type dog that was confined at the rear of a commercial establishment near the child's house. No one observed the attack. The body was badly mauled, and the cause of death was described as exsanguinating hemorrhage with multiple lacerations. The dog was not known to be vicious, although it was kept as a watchdog to protect the shop where it was chained.

Case 10. A 5-year-old boy entered a neighbor's fenced frontyard, as he had done many times before, and was attacked by the neighbor's dogs, seven 5-month-old shepherd-Labrador litter mates. Four other dogs, mixed breed dachshunds, were also present and may have participated in the attack. No witness observed the onset of the attack; however, a passing neighbor saw the child being knocked down by the dogs several times and the boy's unavailing attempts to free himself. The witness threw rocks at the dogs but failed to distract them. The dogs' owner arrived, entered the yard, and removed the victim, whereupon the dogs calmed down immediately. The child died 2 hours later of massive hemorrhages and lacerations.

The victim had entered the yard many times, either alone or accompanied by members of the neighbor's household. The child was well known to the dogs, and he had played with them in the presence of the owner (and other family members) and alone. The child had fed the dogs on some occasions but was known to have no food with him in this instance. The dogs had been regarded by neighbors as friendly, nonaggressive animals.

Case 11. A 17-year-old girl was seated in a chair in the frontyard of the home of a classmate, whom she frequently visited, when she was attacked by the classmate's 2-year-old Great Dane. The friend, seconds before, had gone to her vehicle, leaving the victim and dog alone. The friend turned to observe the dog biting the victim's throat. Other adults in the yard failed to observe the actual onset of attack. The dog was pulled from the girl within seconds. The victim, rushed to a hospital immediately, was pronounced dead on arrival; the cause of death was recorded as asphyxia resulting from a crushed trachea.

The dog was not regarded as vicious, but if stared at, it became extremely agitated and had to be restrained. It was not known if the victim had been aware of this behavioral peculiarity. The victim, a normal, healthy girl, weighed approximately 90 pounds; the attacking dog weighed more than 100 pounds.

Discussion and Conclusions

An estimated 1 million persons are bitten by dogs each year in the United States, and an unknown number of such incidents result in the death of the victim ("Dog-Bite Surveillance," by P. Durfee, veterinary epidemiologist, unpub-

lished report of the Center for Disease Control, Atlanta, Ga., 1973). Of particular interest is the delineation of those factors that motivate dogs to attack and, as in the 11 cases reported here, pursue the attack to a fatal conclusion. Each of these attacks was obviously deliberate; one can only speculate as to whether the animals killed intentionally.

All of the dogs identified as participants in these attacks were destroyed, except the watchdog in case 9. The dog's owner wished to keep it, and the authorities found neither the owner nor the dog culpable since it was securely chained in a well-posted yard. In only one other case did the owner object to the destruction of the animal, and in that case health officials elected to destroy the animal, despite the owner's objection, because they considered it to be a potential public health hazard.

Rabies is often suspected in vicious attacks by dogs. All animals, except those in cases 5 and 9, were tested and found negative for rabies.

Threatening behavior or territorial invasion by less dominant animals are acts capable of inciting attacks by more dominant or protective canids, both wild and domestic (2-4). In several of these cases the dogs may have perceived themselves or their "family" members or their "territories" to be threatened by the victims. Beck and associates (5), in a description of the ecology of dog bites in an urban community, reported that approximately 50 percent of the bites occurred in areas that appropriately might be considered the "territories" of the dogs.

In case 3, the child stoned the dog, obviously a direct threat. In cases 1, 2, 6, 9, and 10, less direct

threats may have occurred. In cases 1 and 2, the victims were playing with children of the dogs' families in areas that the dogs would perceive as their home territories; in each instance, the child's actions may have been interpreted as aggression against the "family" child within the dog's territory. For case 1, this explanation is conjecture because no competent witness was present. For case 2, however, the victim's running toward the infant in the playpen may well have been interpreted as threatening a family member. For case 6, the evidence is circumstantial, but the infant's crawling near the young pups may have represented a significant threat.

In cases 9 and 10, the children entered the dog's territory, and this act may have been sufficient to trigger the attacks. If so, case 10 is difficult to understand since the child had previously entered the yard alone to play with the dogs.

In case 5, a different behavioral trait seems to have been involved. The victim was attacked by male dogs that may have been attracted to a bitch in estrus. Aggressive behavior is commonly associated with sexual stimulation in both wild and domestic canids (2).

The dog in case 11 reportedly became aggressive when stared at by any person. The victim may have inadvertently antagonized the attacking dog by staring, although no witnesses observed this.

In cases 4, 7, and 8 no plausible explanation for the attacks can be offered. Until better ethological data are available on domestic canids, cases like these three must go unexplained.

The 11 cases were not clustered by time of day or month of the year; studies of nonfatal dog attacks have shown a similar lack of

temporal clustering, except as a function of human activity (6-8). The attacks were almost equally distributed between rural and urban settings and, in the absence of dog-human contact denominators for the two locations, no conclusions can be drawn.

Among the more significant factors associated with these fatal attacks was the victim's physical prowess. Except for the 17-year-old in case 11, all the victims were apparently incapable of offering effective defense against a sustained attack. Nine were children under 7 years old, and one was a 75-year-old woman. In case 11, the victim was a physically healthy 17-year-old, but she reportedly weighed only 90 pounds and the attacking dog, more than 100 pounds. Further, the dog reportedly seized her throat in the initial attack, crushing the trachea almost immediately. Even the rapid intervention of adults was to no avail. However, had physically able persons intervened in the other 10 attacks, it seems probable that most of the victims might have survived. Thus, avoidance of unsupervised contact between dogs and physically limited persons appears to be the most basic means of preventing such tragedies.

Some characteristics of the dogs themselves are important in understanding these attacks. The dogs in all 11 episodes were adults except the litter of 5-month-old shepherds in case 10. Adult dogs have been described as more often responsible for nonfatal bites (4); this fact may reflect the age distribution of the pet dog population in the United States, but it is probably a result of other factors also. Aggressive behavior among juvenile canids is often suppressed (except against siblings) until adulthood (2).

Male dogs were involved more often in fatal attacks than female dogs. In the nine cases where sex was determined, seven attacks were by males, one by a female, and one by dogs of both sexes. Since the numbers of male and female dogs in the United States are approximately equal, these data suggest that males may be more likely to deliver fatal attacks than females (9).

In the 11 cases, the physical strength required to deliver fatal injuries further selected for physically mature, large dogs. Of the nine reported attacks by a single animal, seven attackers were large dogs; the two by smaller dogs (cases 4 and 6) were against infants. In most cases, the dogs outweighed and were almost certainly stronger than their victims.

The selection for large animals influences the distribution of breeds involved in these attacks. German shepherds, not unexpectedly, were the breed most often involved (three cases). German shepherds are the most common large breed among dogs registered by the American Kennel Club (unpublished data for calendar year 1975). Also, any large mixed breed of unrecognizable parentage is commonly identified as a German shepherd (9).

The two attacks by St. Bernards suggest that this relatively uncommon breed may be a greater hazard than others. This suggestion was reinforced in a review of four other fatal and near-fatal attacks that occurred outside the time frame of this report; St. Bernards were involved in three of these four cases. Perhaps the most surprising finding was that the fatalities in cases 4 and 6 were the result of attacks by small dogs not usually considered capable of producing severe injury.

None of the dogs involved in the 11 attacks was unowned; even the dogs in the packs responsible for two of the fatalities had owners, and the dogs in five cases belonged to the victim's family.

A pattern is evident in the part of the body attacked and the resultant injuries. No description of the wounds is available for case 4, but in six (75 percent) of the eight other cases involving attack by only one dog, the head and neck were attacked. Death in these cases was attributed to massive hemorrhage or tracheal avulsion. In cases 5 and 10 in which dog packs were involved, injuries were inflicted in many parts of the body including the head and neck. In cases 6 and 8 the head and neck were spared; in these, deep abdominal lacerations caused death. The neck is the most common area for fatal attacks by predatory wild canids and felids, presumably because this site is most vulnerable.

In contrast to these fatal attacks, about 75 percent of nonfatal attack wounds were reported to have been inflicted on upper and lower extremities (3,6,8). Since

bites on extremities are not likely to be fatal, there is an obvious bias in comparing the sites of wounds in fatal and nonfatal attacks. Nevertheless, the seemingly directed nature of the fatal attacks and the general absence of bites on extremities or elsewhere suggest that most of the attacking dogs in the 11 cases probably initiated the attack with intent to kill.

In conclusion, this report of 11 cases of fatal dog bites gives evidence that this problem is of greater magnitude than has generally been recognized. Surveillance should be maintained to determine the number of fatal attacks that occur each year, and more detailed investigations of each case should be conducted to ascertain the causes of such attacks. Behavioral scientists might find this a fertile area for study.

In the meantime, dog owners should be made aware that physically incapacitated persons or small children are at some risk if left alone with dogs, especially the larger breeds. While the stimuli which initiated the fatal attacks are not understood, it appears

that threatening behavior may be the most important single factor and should be avoided.

References

1. Beck, A. M.: The ecology of stray dogs. York Press, Baltimore, 1973.
2. Fox, M. W.: The wild canids. Van Nostrand Reinhold Co., New York, 1975.
3. Harris, D., Imperato, P. J., and Oken, B.: Dog bites—an unrecognized epidemic. Bull N Y Acad Med 50: 981-1000 (1974).
4. Parrish, H. M., Clack, F. B., Brobst, D., and Mock, J. F.: Epidemiology of dog bites. Public Health Rep 74: 891-903, October 1959.
5. Beck, A. M., Loring, H., and Lockwood, R.: The ecology of dog bite injury in St. Louis, Missouri. Public Health Rep 90: 262-269, May-June 1975.
6. Brobst, D., Parrish, H. M., and Clack, F. B.: The animal bite problem. Vet Med 54: 251-256 (1959).
7. Morton, C.: Dog bites in Norfolk, Va. Health Serv Rep 88: 59-65, January 1973.
8. Berzon, D. R., Farber, R. E., Gordon, J., and Kelley, E. B.: Animal bites in a large city—a report on Baltimore, Maryland. Am J Public Health 62: 422-426, March 1972.
9. Schneider, R., and Vaida, M. L.: Survey of canine and feline populations: Alameda and Contra Costa Counties, California, 1970. J Am Vet Med Assoc 166: 481-486 (1975).

SYNOPSIS

WINKLER, WILLIAM G. (Center for Disease Control): *Human deaths induced by dog bites, United States, 1974-75. Public Health Reports, Vol. 92, September-October 1977, pp. 425-429.*

Case histories and the epidemiology of 11 fatal attacks by dogs which occurred in the United States during 1974-75 are presented. Nine children under 7 years, a 75-year-old woman, and a 17-year-old girl were the victims. The head and neck were the target areas for the attacking canids in most of these cases.

A dachshund and a Basenji were the attackers in two cases; larger breeds were involved in the others. Most of the dogs were either owned by the victim's family or were neighbors' dogs known to the victims. The animals in nine cases were tested and found to be negative for rabies. Rabies was probably not indicated as provoking the attack in the other two.

While the stimuli for all the fatal attacks were not clear, it appears that behavior threatening to the dogs may have occurred. If unsupervised

contact between dogs, particularly large ones, and small children or physically limited adults had been avoided, these tragedies might have been prevented.

No specific national surveillance is maintained on dog bites; news releases, personal communications with health and police officials, and newspaper reports were the sources of data on these cases. Improved surveillance is needed to define the number of such deaths that occur and to elucidate the epidemiology of fatal attacks.