



Police and domestic dog bite injuries: What are the differences? What are the implications about police dog use?

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KEYWORDS

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Summary

Background: Despite the widespread use of police dogs, there is very little objective medical information about the injuries they cause when they bite. Our aim was to statistically describe police dog bite injuries.

Methods: We described police dog bite injuries by comparing them with domestic (non-police) dog bites. We retrospectively analyzed their demographic and specific injury data drawn from their medical records. The police dog bite victims came from the Los Angeles Police Department K9 Unit from 1988 to 1990. The domestic dog bite victims came from King-Drew Medical Center, an inner-city public hospital from 1989 to 1996. All of the police dog victims' medical records that could be located were included (595 out of 957). All domestic dog bite victims that arrived for treatment were included ($n = 1109$).

Results: Police dog bite victims were usually bitten multiple times, whilst domestic bite victims were not. Police dog bite victims were bitten more often in the head, neck, chest and flank. They were hospitalised more often, underwent more operations and had more invasive diagnostic tests.

Conclusions: Police dog bite injuries appeared to be more serious than victims of domestic dog bite victims. The reasons for the differences were related to the types of dogs selected and their special training.

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Introduction

Despite the widespread use of police dogs throughout the United States, there is little objective medical

information about police dog bite injuries. With the exception of a single case report from Miami,⁶¹ all other previous medical studies have come from the Los Angeles County + USC Medical Center.^{25,26,46,55}

In 1990, two radiologists, Snyder and Pentecost,⁵⁵ observed a disproportionately high rate of angiograms being done for police dog bites. Pineda

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Table 1 Comparison of police and domestic dog bite victims

	LAPD K9 Unit: police dogs (<i>n</i> = 595) (%)	King-Drew Medical Center: domestic dogs (<i>n</i> = 1109) (%)	χ^2
Multiple bites	73	16	533***
Hospitalisation rate	42	6.9	310***
Gender			206***
Male	98	69	
Female	2	32	
Age (years)			400***
0–12	0.2	29	
13–29	74.8	27	
>30	25	43	
Angiograms	8.9	0.1	97.4***
Operations	4.0	2.3	3.9*

* $p < 0.05$.*** $p < 0.001$.

et al.⁴⁶ later described the high severity of police dog injuries by detailing four case studies. Hutson et al.²⁶ then studied 708 police dog bite admissions. He concluded that the injuries from police dogs were severe, and that the number of bite injuries could be decreased by changing police department policies.

Our purpose here was to examine the dog bite injuries from a very active police K9 Unit by studying

each dog bite victim, regardless of where or how he was treated, and whether or not he was admitted to the hospital. Previous studies have been single hospital compilations of injuries from several police departments, which could tend to focus on the worst injuries. Because of the uniformity in the size, breed and training of American police dogs, our series was representative of police dog bite injuries in the United States. To add perspective, we compared

Table 2 Comparison of international dog bite studies

Study	Period	Admission rate (%)	Multiple bite rate (%)	Study size
LAPD Police Dogs	1988–1990	42	73	595
Adelaide Children's ²⁰	1991	14	7	113
Adelaide, QE2 ⁵⁹	1997	13.8		356
Australia ⁴²	2001	11.5		xx
Mater Children's ⁴⁸	1991	11	9.3	253
Philadelphia Children's ²	1991	7.0	8.0	168
King-Drew Medical Center	1989–1996	6.9	16	1158
Brisbane Children's ⁴⁷	1984–1988	5.8	2.1	277
Chicago Children's ¹²	1982	5.5		199
New Zealand ³¹	1979–1988	4.8		
Canberra Children's ³⁹	1977	1.7	11	119
Hartford ¹⁷	1987	1.5		46
Ft. Hood, Texas ¹⁵	1994	1.3	9.5	704
Jefferson Co., Ala. ³⁴	1973–1976	1.1		274
UCLA ²⁸	1975	1.0	13	222
Dublin ³²	1975	0.2		434
Salisbury ⁵⁸	1989	0.4		225
Taiwan Postal wkr's ¹¹	1991–1994	0.0		192
Thanet ⁵⁷	1989	0.0		187
St. Louis ⁴	1972–1973		9.2	4862
New York ²³	1965–1970		5.1	1869
US Cities ⁸	1956–1957		4.3	
Johannesburg Children's ⁹	1971–1974		4	50
Navajo Reservation ¹³	1986		2.9	772
Bangkok ³⁷	1996		2.2	2326
El Paso ⁴⁴	1998		1.7	300

Table 3 Differences in anatomic location of police vs. domestic dog bites

Anatomic bite location	Police dog bites		Domestic dog bites		χ^2
	N	Percent	N	Percent	
Upper					
Central and proximal extremity	335	32	102	15	64.1 ^{***}
Distal extremity	212	20	233	34	41.2 ^{***}
Lower					
Central and proximal extremity	263	25	157	23	1.1
Distal extremity	239	23	194	28	6.7 ^{**}
Total	1049	100.0	686	100.0	

^{**} $p < 0.01$.
^{***} $p < 0.001$.

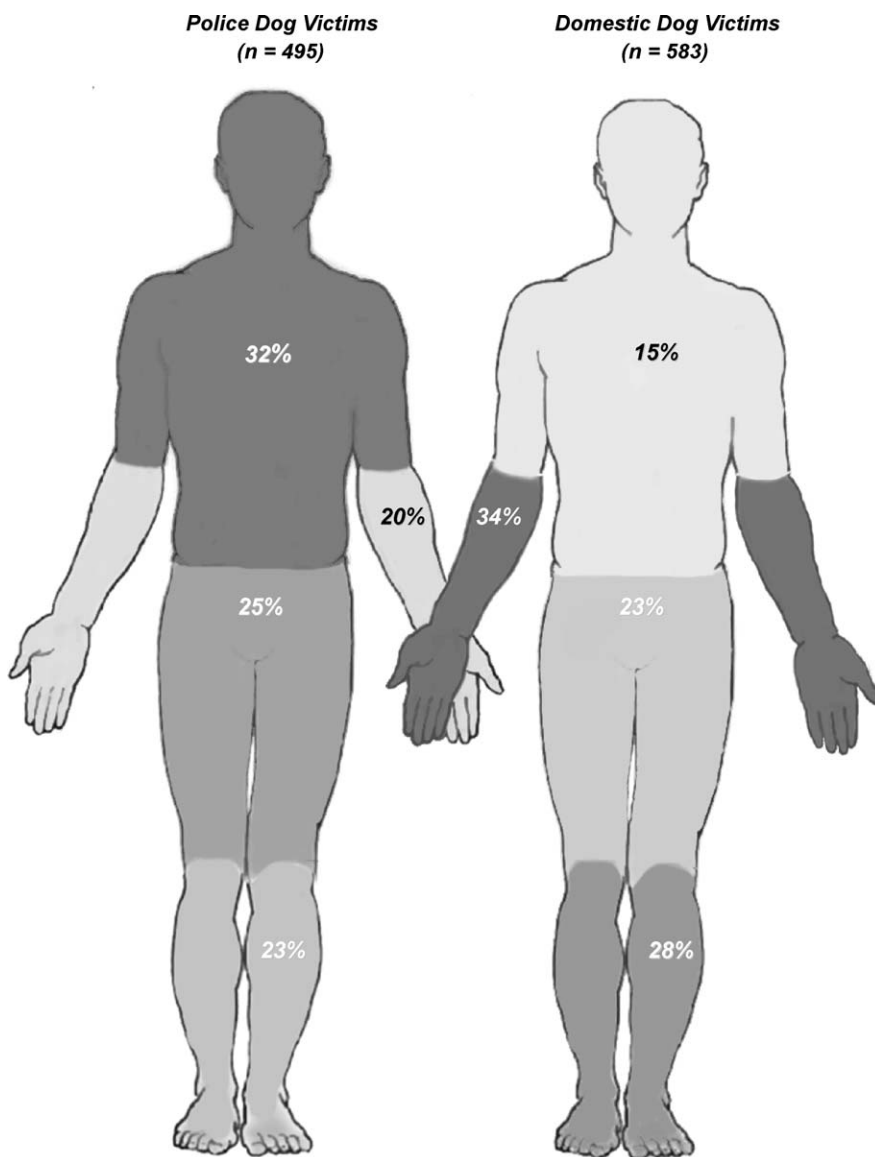


Figure 1 Percentage of total bites within group for victims aged 18–50 years.

police dog bites with domestic dog bites found in an inner-city hospital.

Materials and methods

We retrospectively analyzed the police dog bites of the Los Angeles Police Department K9 Unit over a 36-month period, from January 1, 1988, to December 31, 1990. We started with police records, called "Search Data Reports" (SDRs). SDRs were the forms that police dog handlers filled out each time they deployed their dogs, whether they came into contact with a suspect or not. The information on the SDRs included the names of the handler, his dog, and the suspect, the date and time, whether or not a bite occurred, details of the incident and the medical facility where the suspect was sent for treatment. Since the SDRs were numbered consecutively by date, time, and number, it was certain that our lists were complete. During the study period, the 16 teams of dogs and officer-dog-handlers, had 7108 deployments and 2078 encounters with suspects, that resulted in 957 dog bites. These patients were sent to 36 different medical facilities (Table 1).

Our next step was to approach each of medical facilities' records departments and IRB committees and to find and gain permission for our review. Some of the difficulties that we encountered were the destruction of records in the 1994 Northridge earthquake, and the lawful destruction of emergency room logbooks after 2 years. Some records were inaccessible in condemned buildings. The SDRs themselves lacked important identifying information, such as social security numbers and dates of birth. In spite of these difficulties, we were able to recover 595 records for analysis (Table 2).

We then compared the police dog injuries with domestic dog bite injuries. We retrospectively analyzed the domestic dog bite records of 1109 consecutive patients over an 89-month period, from January 1, 1989, to May 31, 1996, coming to

King-Drew Medical Center. We used the Emergency Department's logbooks and collected the names and medical record numbers of every dog bite victim. Police dog bite victims coming to King-Drew Medical Center were rare and were not counted. Approval of the IRB Committee was obtained (Table 3).

Admission to the hospital was defined as being sent to a hospital ward from the emergency department. Multiple bites were defined as different anatomic areas bitten, instead of numbers of fang marks on the skin. In the analysis of bite location, we compared police and domestic dog bite victims greater than 18 years of age. We purposefully did not include children in this part of the analysis in order to eliminate their size as a confounding variable. Children are well known to have a higher general incidence of head and neck bites because of their short stature (Fig. 1).

King-Drew Medical Center was one of Los Angeles County's six public hospitals and served a low-income minority population in south central Los Angeles. This represented 1109 of 277,365 patient visits to the main Emergency Department, or 0.4% (Table 4).

Admittedly, this data set is an older one. It was chosen for four reasons. First, the data set was comparatively large. Second, the information came from one police K9 Unit over a relatively short time. Third, this kind of information remains exceedingly difficult to obtain. And finally, the techniques of police dog bite training remain unchanged over time and thus are generic and representative of police K9 practice in the United States today.

Results

Most police dog bite victims were males between the ages of 13 and 29 years, and were from minority groups (Black, Hispanic). Domestic dog bite victims had a wider age distribution, with more children, older adults, and women.

Table 4 Differences in ethnicity of police and domestic dog bite victims compared to overall distribution in Los Angeles County (1990 Census)

Ethnicity	LA County ¹⁴ (n = 8,863,164)	Police dog victims (LAPD) (n = 595)		Domestic dog victims (KDMC) (n = 1109)	
	Percent	Percent	z	Percent	z
Black	10	60	38.5 ^{***}	56	49.2 ^{***}
Hispanic	37	32	-2.9 ^{**}	42	3.0 ^{**}
White	41	7	-16.8 ^{***}	1	-26.9 ^{***}
Other	11	2	-6.9 ^{***}	0.8	10.7 ^{***}

Note: z-tests compare ethnic proportions between LA County and each dog victim sample.

^{**} p < 0.01.

^{***} p < 0.001.

All of the police dogs in this study were large dogs weighing between 70 and 90 lb or more. All were German Shepherds and Rottweillers. Identifying the breeds of dogs biting domestic victims was less exact. Most patients could only describe the size and colour of the dog that bit them. Out of 1109 domestic dog bite victims, a breed could be identified in 138 incidents. The breeds were all large dogs: Pit Bull (78), German Shepherd (25), Chow (12), Rottweiler (11), Doberman (8), Bulldog (3), and Labrador (1).

We observed higher hospital admission rates (42% versus 7%) and higher multiple bite rates (73% versus 16%) in police dogs. Police dog bite victims' operative rates were nearly twice as high as domestic dogs (4.0% versus 2.3%). There were 24 operations performed for the 595 police dog bite victims, including 5 arterial repairs, 4 open joint repairs, 1 tendon repair, 1 nasolacrimal duct repair, 2 split thickness skin grafts, and 11 incision and debridements. There were 27 operations performed for the 1109 domestic dog bite victims, including 3 arterial repairs, 4 split thickness skin grafts, 2 eyelid and nasolacrimal duct repairs, 1 neck exploration, 1 operating room failed resuscitation, and 16 incision and debridements.

There were more invasive diagnostic procedures, including angiograms, done for police dog bite victims. Angiograms were necessary in 8.9% of police dog bite injuries, and 0.1% of domestic dog bite injuries. There were three arthrograms done for police dog bite victims, and none for domestic dog bite victims.

When we compared adult victims in both groups, the percentages of bites below the waist in both groups were similar. However, police dog bite victims were twice as likely to be bitten in the area of the head, neck, chest and upper arms (32% versus 15%), whilst domestic dog bite injuries were greater in the hands and forearms (34% versus 20%).

There was one death in the domestic dog bite group, a 9-year-old who was attacked by three dogs.

Discussion

We found that police dog bites resulted in higher rates of hospitalisation, multiple bites, operations, and angiograms than domestic dog bites. We also observed that police dog bites tended towards higher numbers of bites in the central areas of the body: the head, the upper arms, and chest.

These patterns can be explained by several factors. The first factor was the large size of police dogs. Police K9 Units across the United States favoured large dog breeds, such as Belgian Shepherd Malinois and Doberman Pinschers,²⁴ each weighing

70–90 lb or more. The choice was also influenced by the dog's energy and propensity to bite. The training strengthened these characteristics.^{3,10,16,18,21,33}

The second factor was their special training. Dogs were trained to bite down hard. The forces of these bites were between 450 and 800 psi.^{6,10,50} They were also trained to use a "full-mouth bite".^{3,18,33,51} With the full-mouth bite, the dogs bite using all their teeth, including the incisors in the front and the molars in the back in order to strengthen their "hold" on the suspect. They were trained to not let go until commanded ("bite-and-hold").^{38,51}

Our finding of high multiple bite rates was consistent with this training. For example, when a bitten subject tore himself free from a bite, the police dog, following his training, would bite the suspect again in another location.^{3,6,10,16,18,20,24,38,51,52} In reviewing officer-handlers' accounts, it was not uncommon for officer-handlers to allow their dogs to continue to bite suspects as long as they struggled and fought to free themselves. This technique was referred to as "bite-until-passive".

Police dogs were not trained to bite any area of the body preferentially. The most probable explanation for the higher numbers to the head and central body areas was that during arrest situations, suspects were not always be able to defend themselves in the normal way. They often were on the ground, intoxicated with drugs or alcohol, or were partially restrained. Fleeing suspects were also known to attempt to hide by lying close to the ground, putting themselves at risk for head and neck bites.

With domestic dogs, bite percentages below the waist were nearly identical. The higher percentages of hand and forearm bites in domestic dog bite victims were probably due to the normal self-protective reflexes of hand and arm extension for protection from harm. People can also be bitten when they pet or feed their dogs, as well as ill-advisedly trying to stop their dogs from fighting by reaching in with their hands.

Police dog bite victims underwent more operations and had more diagnostic tests. The higher rates of angiograms in police dog bites seen here mirror the findings of radiologists Snyder and Pentecost.⁵⁵ In their study, angiograms were necessary in 7% of police dog bite injuries, and <0.05% in domestic dog bites. Thus, by this measure, police dog bite injuries could be interpreted as being more serious. Our use of angiograms as an indicator of injury severity can be questioned because the majority of the angiograms did not reveal operative lesions or change therapy. We assumed that the

reasons why the clinicians ordered these invasive studies were either because of the proximity of the bites to major vessels or because they were concerned about the large amounts soft-tissue damage associated with the police dog bites. However, we cannot prove this association since we do not have any direct measurements of soft tissue injuries. And we cannot completely rule out any particular outside institution's bias to over-perform angiograms on police dog injuries, even though we have never seen any written policies to that effect.

Deaths due to police and domestic dogs were rare. In our series, one 9-year-old child died after being bitten repeatedly by three dogs. This fits the previously reported patterns of domestic dog bite deaths.^{1,7,22,29,45,60,62} Sacks et al.⁵⁴ reported that between 1979 and 1988, there were 157 deaths caused by domestic dogs bites in the United States; seventy percent of these occurred in children less than 10 years of age. The majority of the domestic dog mortalities were usually children or the elderly, who were unable to defend themselves or escape an attack. Deaths from police dog attacks usually occur in situations when their dogs are allowed to bite repeatedly and out of view of their officer-handlers. One took place when a Florida woman was bitten repeatedly out of sight of officer-handlers in an abandoned house.^{43,49} Another death occurred when the police dog bit a man in the neck who was hiding underneath a car.⁵³ Another case involved the death of the child of a Florida officer-handler when he was not home.⁴⁰ The low mortality rate of police dog bites is best explained by close proximity of officers, their taking their suspects for early medical treatment, and the size and strength of their young adult male suspects, who are better able to withstand attacks.

Our domestic dog bite victims in inner-city Los Angeles were usually bitten by large dogs. The breeds most commonly implicated in the present study were Pit bulls, German shepherds, Chows, Dobermans, and Rottweilers. These were also those most frequently reported in other studies.^{27,41}

When an effort is made to decrease the frequency and the number of police dog bites without compromising the safety of police officers, it can be done.^{35,36,56} Hutson et al.²⁶ showed that in 1992, when the Los Angeles Police Department changed their policy from "find-and-bite" (when police dogs were trained to bite motionless suspects automatically, unless they were called off) to "find-and-bark",⁵² the number of injuries decreased. However, this did not change the severity of the bites when they did occur.

Some police dog trainers and public officials have mischaracterised police dog bites as "just band-aid

injuries"^{5,30} that can be treated with "first aid and left to heal on their own".³⁰ Some trainers also state that "bite-and-hold" training results in fewer injuries.²⁰ Our observations did not support these statements.

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