

Fatal Dog Bite Injury – A Case Report

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ABSTRACT

Background: Dog bite is one of the most common childhood accidents causing significant morbidity and mortality in pediatrics age group (1). The exposed position compounded by the short stature of children makes the face very vulnerable to dog bite or animal bite injuries. Unlike wounds inflicted by assaults and accidents, animal bite wounds are distinctive as they are puncture type deep wounds which are injected by the bite force, with inoculums of pathogenic bacteria from the saliva of the attacking dog.

Case Report: A case of a 2 month-old child who had succumbed to multiple facial and head bite injuries is presented. At autopsy, multiple bite wounds were noted on the upper part of body like face, head, chest and abdomen. Distinctive bite marks diagnostic of canine dentition were present, most prominently on the head, face and chest. Death was due to cranio-cerebral damage.

Conclusion: Public health notification should occur for all dog bites. This would facilitate the development of regional dog bite registries with information on incidence and dogs at risk, which in turn could guide policies such as leash laws and licensing.

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► *Implication for health policy/practice/research/medical education:* Dog Bite Injury

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1. Introduction:

Dog bite is one of the most common childhood accidents causing significant morbidity and mortality in pediatrics age group (1). Rabies, an almost invariably fatal disease continues to be the most serious and most dreaded disease associated with dog bite (2). Bite wounds are always considered as complex injuries contaminated with

unique polymicrobial inoculum. There have been a few published case reports focusing on deaths due to dog bites and animal attacks (3-5).

Interestingly 78% of dog bite injuries in children occur in the head and neck (figure-1) while only 10% affect this region in the adults (6). This significant difference is attributable to the short stature of children which makes the face more vulnerable. The lips, nose and cheek comprise the central 'target area'.

Many of these brutal attacks were by a single pet dog within the owner's yard or its proximity; the most frequent fatal bite

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location on the victim was the head and neck region⁷. Three previous studies indicated that the majority of dog bite deaths were among children less than 10 years old (4-7). One large study found that pit bull breeds were involved in over 40% of all dog bite fatalities and had three times the incidence of bites caused by German shepherd breeds (5).

Force delivered by a dogs jaw can be as high as 450 lbs/sq inch. Such high quantum of force delivered by the sharp teeth of these mammals can result in three main types of soft tissue wounds, lacerations, punctures and avulsions with or without actual tissue defect. A typical dog bite results in a combination of puncture type wound with adjacent tearing of tissue—‘hole and tear’ effect (figure 2). Some degree of crush injury also occurs due to the dynamics of the bite (8).

Dog bite injuries in children are a preventable health problem. To characterize this type of injury, we have undertaken to define demographic criteria and patterns of injury inflicted by dogs in our paediatrics population.

2. Case Report:

This 2 month-old female infant was at her house and was left briefly unattended on the floor of 3rd floor. While the mother had gone to buy vegetable from nearby, so keeping the door of house open. A husky dog attacked the child. The dog was subsequently killed by local peoples. The child was taken to a major trauma centre, where she was declared brought dead. At autopsy, multiple bite wounds were noted on the head, neck, chest, and abdomen (Fig. 1). Distinctive bite marks diagnostic of canine dentition were present, most prominently on the face. Skull is found fractured to the pieces on its posterior 2/3rd aspect of skull, mostly on the parieto-temporal region with a linear fracture extending backward and left laterally to involve left parieto-occipital bone. Nibbling mark is found on the margins of fractured skull bone at places (Fig. 2). Meninges found lacerated under the fractured skull on right parieto-temporal region. Right lobe of brain is found lacerated on the parieto-



Fig. 1. It shows multiple contused bite marks. Because of the victim's small size, these wounds were all caused by multiple bites from one of the dog's dental arches.



Fig. 2. Soft tissue wounds— lacerations, punctures and avulsions. A typical dog bite results in a combination of puncture-type wound with adjacent tearing of tissue—‘hole and tear’ effect.



Fig. 3. The skull bones in children are thin and incompletely mineralized making them susceptible to puncture-type fracture.

temporal region underneath the skull fracture. Death was attributed to cranio-cerebral damage.

3. Discussion:

Children are at greater risk of being bitten by a dog than any age group (9), and the problem occurs worldwide. Dog bite injuries (DBI) particularly in children are a consequence of a combat between a terrified and helpless child and the innate and

instinctive aggression of the dog. Injuries can therefore be multicentric and penetrating.

There are several reasons why young children are more likely than adults to be attacked to the head. First, children's are lower stature. Second, children are more likely to lean/hold their faces close to the dog's head which is perceived as a threatening distance by dogs. Third, adults tend to provide a better defense against attacks.

The skull bones in children are thin and incompletely mineralized making them susceptible to puncture-type fracture (figure 3) with intracranial injury (10). Penetrating neck wounds could present with pulsatile hematoma, profuse external bleeding, subcutaneous emphysema, hemoptysis, difficulty in swallowing or voice changes all of which indicate vascular, laryngeal or esophageal injury (11).

The dog attacks that are detailed in this case report were similar to previously reported dog attacks in that the victims were young and relatively defenseless, which has been a major finding in all earlier studies (3-5, 7). Children in the 1 to 4-year age range were at greatest risk, but the age of the victims ranged from newborn to 91 years. Other reported common factors included attacks that occurred near or at the owner's residence, and the location of fatal bite wounds was usually in the head and neck region (4, 7). Bites to head, neck and face in younger children (<6 year) and to the lower limbs in older children (>6 year) are the most common age specific anatomical location for dog bite injuries (12-15).

Generally, children do not recognize that their playful behaviour may elicit an angry or defensive reaction from an otherwise friendly well known pet dog. Also, behaviour not generally regarded as provocative may be interpreted by a dog as an invasion of his territory and incite an attack. Therefore young children should never be left unsupervised around any dog. 39.5% of dog bites were by stray dogs. The stray dog menace is rampant due to poor dog elimination activities by municipal bodies.

Compounding this, there is also community resistance to dog catching and stray dog elimination. Rabies awareness campaigns should be launched and pet enumeration, licensing and vaccination should be made compulsory.

4. Conclusion:

We conclude that effective prevention strategies must stress careful supervision of young children and the family or neighbor's and stray dog, a scenario that may easily lead to complacency and set the stage for a severe injury. We believe public health notification should occur for all dog bites. This would facilitate the development of regional dog bite registries with information on incidence and dogs at risk, which in turn could guide policies such as leash laws and licensing. The stray dog menace is rampant due to poor dog elimination activities by municipal bodies. Compounding this, there is also community resistance to dog catching and stray dog elimination.

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