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Desexing: the overlooked way to reduce dog attacks

KATINA D'ONISE

Dog and Cat Management Board, SA

Desexing of dogs results in a range of well known benefits for the dogs and their owners, including specific health benefits for dogs, improvement in the sociability of dogs, and a reduction in unwanted litters (Reichler 2009). The potential that desexing offers to reduce the risk of dog attacks is not so widely known. Good epidemiological evidence, as well as evidence from animal behaviour science, suggests that desexing dogs is an important modifiable risk factor for dog attacks on people and on other animals. This presentation reviews the evidence of the benefits of desexing for dog attack reduction.

A relatively small number of studies have been published that explore the epidemiology of dog attacks on humans (for exampleGershman et al 1994; Messam et al 2008; Overall & Love 2001; Shuler et al 2008). These studies have examined a number of possible risk factors for dog attack, ranging from victim-specific factors (such as age and gender) to dog-specific factors (such as dog breed, age, gender, and training status). Beyond the effect of dog gender, some studies also examined the effect of the neuter status of dogs. These studies are observational in design and retrospective. They document the details of attacks after they have occurred. These studies are thus prone to a range of biases, in particular confounding and measurement bias, some more than others.

The study by Schuler and colleagues is likely to be the least biased study published that examined the risk factors for dog attack (Shuler et al 2008). This study used a retrospective cohort design that examined all dog attack reports to the authorities over a period of one year. Another strength of this design was that dog attacks in the jurisdiction concerned were reportable by law, which was likely to lead to more complete reporting of dog attacks compared with other published studies. Further, the dog attacks came from a community sample rather than from a sample restricted to dog owners or dog owners who frequent a particular veterinarian, and thus the sample was likely to be more representative of the full range of dog attacks across the population. This study found that the risk of dog attack was greatest for intact male dogs (relative risk (RR) 18.6, 95% confidence interval (CI) 13.9-24.7), and then intact female dogs (RR 10.5, 95% CI 7.4-14.8), when compared with desexed female dogs (Shuler et al 2008).

It is also instructive to examine those studies that reported details of dog attacks that led specifically to severe injury or death (Sacks et al 1996; Wright 1985). Although these studies tended to provide weaker evidence (generally they used a case-series design), they present an opportunity to examine precisely those events that society most wants to prevent. Only a few of these studies were able to report on the neuter status of the attacking dog, and the information was not always complete for each attack. That said, where the information was available, the vast majority of dogs involved in severe attacks on humans were not desexed. For example, in the study by Sacks et al, of the 20 cases of attack leading to death where neuter status was known, 19 were not desexed. Further, 15 of the 20 attacks involved an entire male dog (Sacks et al 1996).

The findings from animal behaviour literature can be used to 'triangulate' the evidence from epidemiology. That is, if the evidence from a different perspective supports the findings from epidemiology, then there is greater confidence that the epidemiologic results are an accurate reflection of the 'real' risk. There is consistent evidence that intact males are more aggressive than neutered males, and also that intact males are the most common group with dominance aggression (Overall & Love 2001). There is less consistent evidence however for intact females, with conflicting reports of increased or decreased dominance aggression compared with neutered females (Guy et al 2001; Overall & Love 2001). These findings are broadly consistent with those from epidemiology, given that aggression is more likely to lead to dog attacks, and the greatest risk is consistently seen with intact male dogs. This gives further confidence that the finding of reduced risk among neutered dogs is a correct reflection of a true difference.

There is also good reason to promote desexing for purposes beyond the usual indications from a public-health, injury-control perspective. On the basis of the evidence presented here, desexing of dogs is likely to

make dogs less aggressive and less likely to attack. This is an example of making the environment less risky, rather than relying on the behavioural change of all the individuals potentially in contact with dogs, through education or training (Haddon 1980). Modifying the environment rather than modifying the people is a well established principle in injury control, and there are many historical examples of successful risk reduction employing this principle. Requiring swimming pools to be adequately fenced is an example of a successful environmental control strategy for drowning prevention, rather than relying on continuous supervision of children around pools. This alternative approach is particularly important with dog-attack control as there is no good evidence that education only approaches have reduced the risk of dog attack (Duperrex et al 2009).

In summary, both the epidemiology literature and animal behaviour studies indicate that dog attacks are less likely among neutered dogs, and there is a suggestion that desexing dogs will reduce the most severe attacks on humans. Borrowing from what has been consistently proven to be the case in injury control, interventions that modify the environmental risk factors are more likely to be successful. In dog management, interventions that encourage the desexing of dogs are likely to directly reduce the risk of dog attacks.

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About the author

CONTACT

Dr Katina D'Onise

MBBS MPH PhD FAFPHM

Public Health Physician,
Epidemiology Branch, South Australian Department for Health and Ageing

Email: katina.d'onise@health.sa.gov.au