

Lab Animal Bite Anaphylaxis: Underappreciated, Serious; Not Rare; Needs More Attention

The papers published in this issue of the journal by Stave et al^{1,2} may represent the tip of an anaphylaxis iceberg. Two years after I arrived at UCLA, I took care of a young woman researcher who arrived at our occupational health clinic frightened, saying she was having a hard time breathing after being bitten by a mouse a few minutes earlier. She did not recognize that she was having rodent bite anaphylaxis. We treated her with epinephrine and made sure she got safely to the emergency department here. I asked our most experienced nurse practitioner, who had been at UCLA for many years, if we saw these often, and she said “yes, almost one a year.” I was surprised. I reviewed the literature and found only a handful of case reports. The woman we had seen was typical; she had some minor nasal rhinitis symptoms; her supervisor had encouraged her to wear an N-95 respirator, she occasionally took antihistamines but nothing dramatic had ever occurred before and she had no history of asthma or anaphylaxis. We continue to see one case about every other year including one young PhD candidate with a rodent bite this year (after the studies published in this issue were completed) who spent part of a weekend in our ICU after a rodent bite caused anaphylaxis with a mild prior history, similar to the young woman above.

Stave et al¹ provide the appropriately cautious scientific conclusion that “anaphylaxis from laboratory animal bites occurs more frequently than suggested by the literature.” Their study had a 16% response rate representing almost 200 organizations and found 24 cases. Even factoring in some case self-selection bias of respondents, you can extrapolate that 50 to 100 cases a year may occur in such academic settings where rodent research goes on, not to mention all the private sector, government sector, and other work areas missed, reflecting the fact that the targets of the survey were narrower than the number of all potential rodent research institutions. The bottom line is that there may be hundreds of individuals who work with rodents and some other research animals who experience life threatening anaphylaxis. Further, cases may be occurring in other settings where work with animals is conducted, including agriculture.

Searching workers compensation databases or Occupational Safety and Health Administration logs to find such cases may prove difficult, as these may be coded as an animal bite, bite, rodent injury, rodent exposure, allergy, anaphylaxis and only occasionally, rodent or animal related anaphylaxis. The cases are typically seen in emergency departments, occupational health clinics, and urgent care clinics by different individual providers, and being uncommon enough, in siloed care entities different providers may not aware of what others are seeing. As a result, the true incidence has likely gone un-noticed and the overall picture of the risk is not apparent, except for the window into this significant problem described in this issue.

In addition to the immediate and future health risks to these individuals related to the anaphylaxis, the impact on research careers is substantial. Return to work restrictions, epinephrine auto injectors, personal protective equipment, and buddy systems are all potentially useful. But since a life-threatening anaphylaxis event could occur again with potentially dire consequences, a discussion of career adjustment must be raised and it is not often a welcome choice for such individuals who are dedicated to their research or for highly skilled technicians and animal care workers who have limited other career options.

It is time to add prevention of anaphylaxis to our laboratory animal allergy prevention programs. This includes efforts to prevent animal bites and sharps injuries by incorporating a discussion of anaphylaxis in biosafety training as well as a review of animal handling practices. Since anaphylaxis requires prior sensitization, we should redouble our efforts to prevent dermal and respiratory allergy and asthma, which remain concerns regardless of whether a worker experiences anaphylaxis.

As clinicians, we should also recognize that anaphylaxis may be the first presentation of allergy and that a history of animal bites without adverse consequences does not provide any assurance that a subsequent bite will not result in a potentially life-threatening event. And even in clinical settings that have limited emergency response capabilities, we should be prepared to diagnose anaphylaxis in such individuals who often do not recognize what is happening, provide basic life support if needed, and administer epinephrine prior to transport to an emergency department.

In sum, this is a significant hidden potentially lethal health risk, not well captured in prior literature and existing data bases. It carries significant ramifications for many individuals: those who have experienced anaphylaxis, their supervisors and co-workers, and their employers and research project teams, as well as those at future risk for first anaphylaxis not to mention clinicians who may not be aware of this not infrequent serious event.

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