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Anaphylaxis after bites by rodents

We report two cases of anaphylaxis in laboratory workers after rodent bites.

Case reports

Case 1—A 23 year old man had no history of allergy until April 1981, when he complained of sneezing, itching, and irritation of his nasal passages five years after starting work with animals. In December 1981 he complained of severe rhinorrhoea within five minutes of exposure to animals. In September 1982, during weekend work, he was moving rats from one cage to another and was bitten. He later reported that within a few minutes he felt tightness of the chest; a colleague noticed that his skin became bright red and he complained of "tingling"; his eyes became bloodshot, his nasal passages congested, and he expectorated mucus. As the acute respiratory distress persisted he was admitted to a local hospital. Within four hours the effect had worn off but two and a half hours later he again felt tightness of the chest and inflammation of his skin returned. These symptoms subsided when a nurse removed his feather pillow. He no longer works in contact with animals.

Case 2—A 30 year old man had worked with rodents for eight years without experiencing any symptoms of allergy; he was not atopic. In September 1982, while working with mice, he was bitten on the hand. The bite drew blood. Within five minutes he felt a warm flush in his hand, which gradually spread to his arm and body over the next 10 minutes; 20 minutes after the bite his eyes and nose began to run profusely and he developed tightness of the chest. He was given chlorpheniramine maleate 10 mg intravenously and salbutamol by inhaler. The chest symptoms subsided within 10 minutes and the others over the next few hours, during which he complained of a headache. Six hours after the bite he was perfectly well.

INVESTIGATIONS

Skin prick tests and estimation of specific IgE antibodies by standard radioallergosorbent test procedures were carried out; the table shows the results. The subject in case 1 had a pronounced increase in reactivity, principally to rat and mouse allergens but also to guinea pig serum, over eight months; the latter tests were carried out nine months before the anaphylactic reaction. Specific IgE antibodies to these allergens were also increased. The immunological tests in case 2 were less positive but more specific; the high concentration of IgE antibody to mouse urine is noteworthy.

Comment

Both subjects had worked for some years with rodents before becoming allergic to them. The subject in case 1 was atopic and allergic to feathers. He had raised antibody concentrations and positive skin test results to several allergens; both were therefore of less diagnostic value than in the non-atopic subject in case 2, whose strongest reactions were to mouse urine.

Published accounts of anaphylaxis after animal bites are rare; the only report we have found is that of an incident caused by a slow loris in Thailand.[1] It is likely, however, that the event is more common than the literature suggests, and there may be at least anecdotal evidence of other such episodes. Although bites from rodents are common this severe reaction is extremely rare. Those who manage institutions with large numbers of animals would be prudent to review their medical arrangements for dealing with such emergencies.

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Immunological findings

Allergen	IgE antibodies (% binding of I^{125} rabbit antihuman IgE)			Skin prick test (diameter of response in mm)			
	Case 1		Case 2	Case 1		Case 2	
	Apr 1981	Dec 1981	Sep 1982	Apr 1981	Dec 1981	Sep 1978	Sep 1982
Rat							
Urine	11	25	6	5	10	0	3
Dander		23	0	4	12		3
Serum		28	2	5	16		0
Mouse							
Urine		21	15	7	12		6
Dander		14	6	7	5	0	0
Serum		21	4	7	16		0
Rabbit							
Urine		1	0	4	3		0
Dander		1	0	4	5	0	0
Serum		5	0	0	5		0
Guinea pig							
Urine		2	3	3	4		3
Dander		4	1	3	3	0	4
Serum		17	0	3	10		0
Grass pollens				4	4		0
Dermatophagoides pteronyssinus				4	5		0
Cat dander				3	10		0
Dog dander				3	9		0