

Dear Editor

### Anaphylaxis after a Cat Bite

The anaphylaxis is sometimes lethal and requires immediate treatment. A bee sting, an insect bite, and a rodent bite are described as an anaphylaxis caused by the animals, but not a single example of a cat bite.<sup>1-3</sup> A cat bite itself is not rare, but it is unusual that it leads to anaphylaxis.

A 42-year-old woman came to our hospital in an ambulance because of systemic rash and dyspnea. As she was going to change the cat food, she had the index finger of her right hand strongly bitten. She made the cat keep on biting for a while. Dyspnea, systemic rash and headache occurred after 30 minutes. She arrived at our hospital one hour after she had her hand bitten by the cat. The physical examination showed swelling with the redness of the right hand (Fig. 1), systemic urticaria (Fig. 2), wheezing and hypoxemia (SpO<sub>2</sub> 90% under room air). The blood pressure, pulse rate and respiratory rate were 110/60 mmHg, 108, 18 count per minute respectively. We treated an intramuscular injection 0.2 ml of epinephrine, 250 mg of aminophylline and hydrocortisone 300 mg infusion. The wheezing completely disappeared in one hour and the urticaria almost disap-

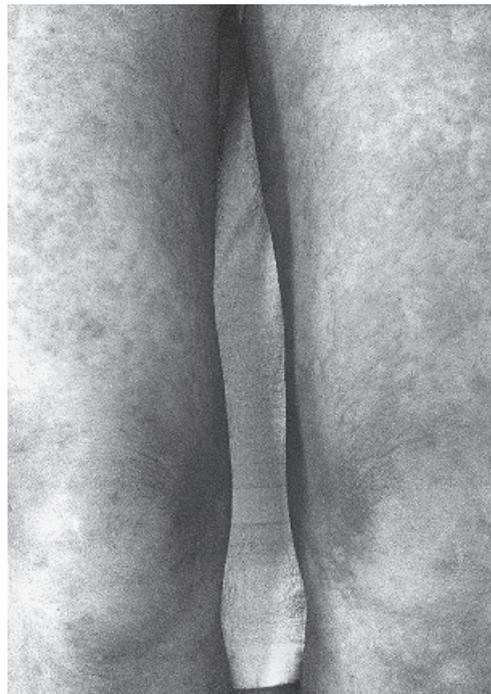
peared.

She had atopic dermatitis at the age of 20 and had both perennial rhinitis and asthma at 30. She began to keep a cat when she was 27 year old. Five years after keeping the cat, she noticed nasal symptoms and experienced wheal with itching at the bitten part of her skin. She felt a cough and dyspnea once a month and took an over-the-counter drug, but never had undergone treatment by a doctor. RAST data disclosed cat dander score was 6, dog dander was 5 and other many common allergens, including house-dust-mite, pollens, and fungus were also positive. The peripheral blood eosinophil after the steroid administration was 1.6%. The lung function test performed at next day showed FEV<sub>1.0</sub>/FVC% was 83.6%, %MMF 72% and %VC was 113% respectively. The airway hypersensitivity examination being performed from a discharge several months later was positive. The prick test of the cat saliva showed flare diameter, 18 mm and wheal diameter 8 mm. Negative control (50% glycerin, Torii Pharmaceutical, Tokyo, Japan) and positive control (added histamine dihydrochloride to the negative control adjusted to the final histamine concentration at 1 mg/ml) showed flare 2 mm, wheal 2 mm, and 7 mm, 6 mm respectively.

A cat sensitized patient may have itchy eyes, a cough and asthmatic attacks by being with a cat. And also, a cat scratches at and licks their skin can cause



**Fig. 1** One hour after being bitten by her cat, the right hand was swelling. The scar is found in her index finger and middle finger.



**Fig. 2** A wheal with flare was found on her both legs. A similar rash was found in her face, both upper limbs and trunk.

itching, eruption (a rash, urticaria). The major cat allergen *Fel d1* is mainly originated from a sebaceous gland of skin<sup>4</sup> and also present in saliva.<sup>5</sup> So that we can speculate that a cat bite can cause anaphylaxis. This should be the first report on a cat bite which caused anaphylaxis to a man.

When a cat fawns on an owner, the cat gets caught slightly and for a short time. Such situation does not have much quantity of salivary injection. This may be the reason why anaphylaxis by a cat bite is unusual. The patient in our case was going to change the cat food and had her hand bitten deeply by her cat. To make matters worse, the patient did not stop the cat immediately. This behavior may have caused a large quantity of saliva injection.

Staphylococcus infection is often found, and *Pasteurella* is sometimes found in a cat bite wound.<sup>6</sup> Therefore, these bacteria and the toxin may become the anaphylactic cause. Actually, she had not only the specific IgE antibody to cat dander but also the antibody for the staphylococcus toxin (RAST score of enterotoxin A and B were 2 respectively). The possibility that a staphylococcus toxin caused anaphylaxis cannot be excluded,<sup>7</sup> but the possibility will be low. We were not able to find the literature that *Pasteurella* caused anaphylaxis.

There have been a few cases reported on a hamster bite which caused anaphylaxis to its owner and as a result lead him to vegetative state.<sup>8,9</sup> We should recognize that the cat bite may cause anaphylaxis and it can sometimes become lethal.

Yuji Maeda<sup>1</sup> and Kazuo Akiyama<sup>1</sup>

<sup>1</sup>Department of Allergy and Respiratory Medicine, National Hospital Organization Sagamihara National Hospital, Kanagawa, Japan

Email: y-maeda@sagamihara-hosp.gr.jp

Conflict of interest: No potential conflict of interest was disclosed.

## REFERENCES

1. Kemp SF, Lockey RF. Anaphylaxis: A review of causes and mechanisms. *J Allergy Clin Immunol* 2002;**110**:341-8.
2. Moneret-Vautrin DA, Morisset M, Flabbee J, Beaudouin E, Kanny G. Epidemiology of life-threatening and lethal anaphylaxis: a review. *Allergy* 2005;**60**:443-51.
3. Philipsen TE, Molderez C, Gys T. Cat and dog bites. What to do? Guidelines for the treatment of cat and dog bites in humans. *Acta Chir Belg* 2006;**106**:692-5.
4. Dabrowski AJ, Van der Brempt X, Soler M *et al*. Cat skin as an important source of Fel d I allergen. *J Allergy Clin Immunol* 1990;**86**:462-5.
5. van Milligen FJ, Vroom TM, Aalberse RC. Presence of *Felis domesticus* allergen I in the cat's salivary and lacrimal glands. *Int Arch Allergy Appl Immunol* 1990;**92**:375-8.
6. Peeples E, Boswick JA Jr, Scott FA. Wounds of the hand contaminated by human or animal saliva. *J Trauma* 1980;**20**:383-9.
7. Schofield LN, DiNinno VL, Bhatti AR. A *Staphylococcus aureus* enterotoxin-B induced type 1 immediate hypersensitivity reaction in a goat. *Microbios* 1997;**89**:29-30.
8. Inoue K, Okabayashi K, Ymanoue N *et al*. [A case that led to cardio-respiratory arrest from anaphylaxis by a hamster bite]. *Nippon Kyukyū Igakukai Zasshi [Jap Clin Emerg]* 2002;**5**:324-8 (in Japanese).
9. Hesford JD, Platts-Mills TA, Edlich RF. Anaphylaxis after laboratory rat bite: an occupational hazard. *J Emerg Med* 1995;**13**:765-8.