

Occupational Asthma Caused by Orangutan in a Zoo Animal Handler

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ABSTRACT

A zoo animal handler developed bronchial asthma for the first time from handling orangutans (*Pongo pygmaes*). He had prior allergic reactions (rhinoconjunctivitis and urticarial rash), but no asthma, to deer and other hoofed animals in the zoo. In a work-site challenge, immediate and late onset of asthmatic symptoms and airflow obstruction were provoked by carrying a baby orangutan for about 20 minutes.

Keywords: *Pongo pygmaes*, worksite challenge, animal allergy

INTRODUCTION

Exposure to animal allergens is a well-known cause of occupational asthma in animal handlers such as laboratory workers, animal farmers and veterinarians. Although exposure to animal allergens is potentially widespread among zoo workers, however no cases of asthma from handling primates in zoo keepers have been reported in the literature.

CASE REPORT

The patient was a 36-year-old Indian male who had been working as an animal handler in the Singapore Zoological Gardens for seven years. His job involved feeding, cleaning, grooming, and training the various animals, which included at different periods during his employment, reptiles, hoofed animals, big cats and apes. He was a non-smoker and did not have a family history of atopy. Skin prick testing with a standard battery of 20 common allergens showed that he was sensitive to house dust and house mites, but not to cats, dogs or birds. He had bronchial asthma in early childhood, but was without symptoms for many years. In his second year of work at the zoo, however, he developed acute allergic reactions when handling deers and hoofed animals (rhinitis, conjunctivitis, and contact urticaria). He began having asthmatic symptoms when he started handling orangutans (*Pongo pygmaes*) in his seventh year of employment. Over a period of three months, he experienced almost daily symptoms of cough, wheezing and shortness of breath. As he regularly put on public performances twice a day with the orangutans, he

noted that his asthma attacks always came on minutes after hugging and cuddling them before the audiences. There was no relief from symptoms in the evenings or during weekends. His symptoms persisted in spite of inhaled bronchodilator and steroid treatments.

His symptom and serial peak flow response to planned removal from exposure was assessed while he stopped handling orangutans altogether, and handled only big cats (lions and puma) and snakes. His symptoms improved perceptibly when he no longer experienced post-performance attacks of asthma. His peak flow rates improved only gradually over six weeks from a mean daily level of 250 L/min to 450 L/min.

Specific inhalational challenge was accomplished by re-exposing the patient briefly to an orangutan at the zoo. This was done by getting the patient to carry a baby orangutan for about 20 minutes in his arms. An immediate asthmatic reaction occurred within minutes. The patient showed involuntary dry cough, audible wheezing and visible shortness of breath, and expiratory rhonchi on auscultation. His peak expiratory flow rate dropped from 450 L/min to 100 L/min. (Fig 1). This was quickly reversed with inhaled salbutamol, but 3 hours later, his peak flow rates showed a sustained decline from 400 L/min to about 200 L/min, before recovering towards a pre-challenge level 18 hours later.

A control challenge was done a month later by exposing the patient to a lion cub. The patient spent about 20 minutes playing with the cub in a cage. This time, his baseline peak flow rate showed no significant decline after exposure, and there was no clinical evidence of asthma.

DISCUSSION

Animal allergy is a common cause of bronchial asthma. Rats, mouse, hamster, horse, cattle, pig, sheep, goat, deer etc are well known causes of occupational allergy including asthma in veterinarians, laboratory workers and animal farmers⁽¹⁻³⁾. However, allergy to primates is rare and there has been no report of occupational asthma in zoo workers.

The mechanisms of asthma due to orangutan is unknown. In this patient, the clinical presentations of allergic symptoms which developed within a few years of employment and immediate onset within

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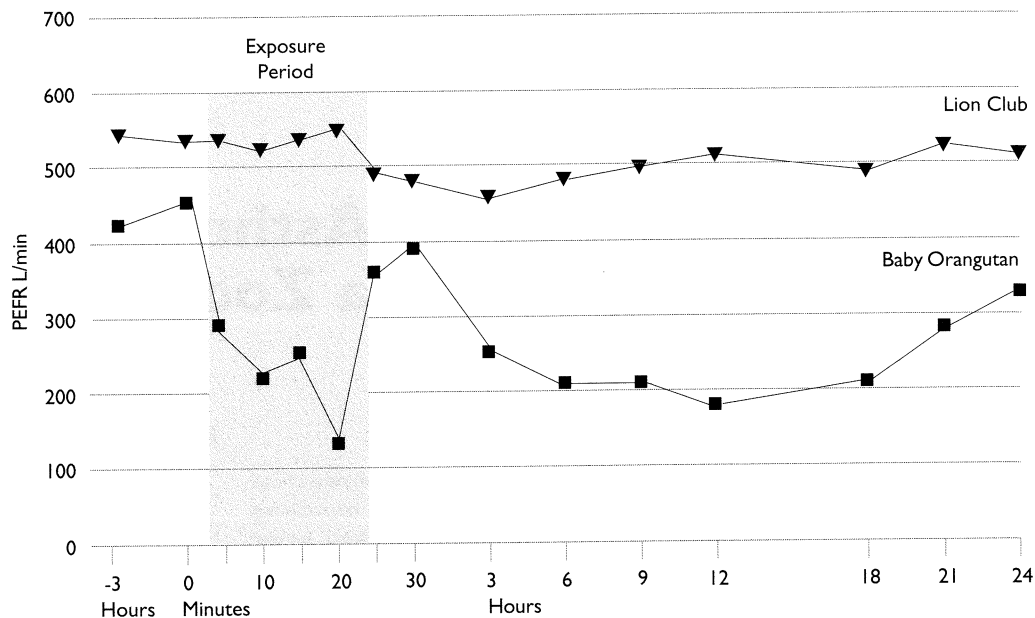


Fig 1 - Results of worksite challenge

minutes of exposure to deer and other animals are typical of animal allergy. It is known that about a quarter to half of patients with animal allergy go on to develop bronchial asthma. This patient's childhood history of asthma and multiple allergies to different animals in the zoo suggest that an atopic predisposition and prior animal sensitisation are therefore likely to play a role in him developing asthma from subsequent exposure to orangutans. During specific bronchial provocation testing, the dual (immediate and late) asthmatic reaction is also typical of allergen-induced, IgE-mediated bronchial asthma.

For practical reasons, it was not possible to perform further investigations with skin prick or inhalational testing with laboratory isolates of the allergen in this patient. However, there has been one previous report in the literature documenting bronchial asthma due to exposure to the dander of

a species of New World monkey (the cotton top tamarin), in an academic researcher and his assistant⁽⁴⁾. The asthma appeared to be IgE-mediated. However, there are no reports of respiratory sensitisation to orangutan in zoo workers. Exposure to orangutan should be added to the list of documented occupational causes of asthma.

REFERENCES

1. Bardana EJ. Occupational asthma and related conditions in animal workers. In: Bardana EJ, Montanaro A, O'Hollaren MT. Occupational Asthma. Philadelphia Hanley & Belfus, Inc., 1990:225-35.
2. Cockcroft A, Edwards J, McCarty P, et al. Allergy in laboratory animal workers. *Lancet* 1981;827-9.
3. Slovak AJ, Hill RN. Laboratory animal allergy: A clinical survey of an exposed population. *Br Med J* 1981; 28:38-40.
4. Petry RW, Voss MJ, Kroutil LA. Monkey dander asthma. *J Allergy Clin Immunol* 1985; 75:268-70.