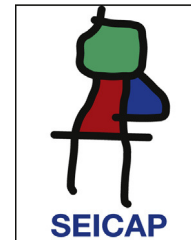




## Allergologia et immunopathologia

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### LETTERS TO THE EDITOR

#### Is generalized reaction after exposure to big cats at the circus really unpredictable in highly cat-allergic individuals?



To the Editor,

We read with interest the article from Feleszko et al.<sup>1</sup> showing a generalized allergic reaction in a 8-year-old boy, sensitized only to cat dander, few minutes after the beginning of a lion show at the circus. The authors stated in the title “Unexpected cross-reactivity in a cat-allergic patient...” and emphasized the risk that individuals sensitized to cat in domestic setting could develop severe allergic reaction after the exposure to other animals in different settings.

Although the warning appears to be appropriate, we wish to underline some crucial aspects showing that this risk is absolutely to be “expected” in the circus setting.

First of all, as stated above, a cross-reactivity in the circumstances reported in this case cannot be considered as “unexpected”. In fact, after the article of de Groot et al. on a Fel d 1-like molecule found in big cats reported by Feleszko et al., more recent studies have shown the presence of another allergen (a lipocalin) which can explain a cross-reactivity between cat/dog/other animals.<sup>2,3</sup> Moreover, since several mammals live and “work” in a circus, it is likely that high amounts of lipocalins as well as albumins,<sup>4</sup> typical mammalian allergens, derived from these animals are present in that environment.

The size of animals involved in this case-report might play an important role as “predictable” risk factor for generalized allergic reactions in individuals already sensitized to cat allergens. The weight of a lion fluctuates between a minimum of 120 kg in female and a peak of 250 kg in male lion whereas a common cat weighs about 4–5 kg, as a consequence it is likely that the production of allergen in lions (and its clinical effects) will be of bigger size.

An evaluation of specific IgE by using the microarray technique ImmunoCAP ISAC (ThermoFisher Scientific – Immuno-Diagnostics, Sweden) for lipocalins (Can f 1, Can f 2, Equ c 1, Fel d 4, Mus m 1) and albumins (Bos d 6, Can f 3, Equ c 3, Fel d 2) would have been very useful to evaluate

the possibility of cross-reactions between the allergens of different animals in this patient.

Secondly, authors state “Current recommendations to control allergic symptoms in cat allergic patients... do not include any restrictions of contact with big cats in places like Wild Parks, Zoos or circus visits”, this is true because reported recommendations refer exclusively on control measures in domestic environments. Moreover, the references reported in the article were published a few years ago when some more recent discoveries on animal allergens have not yet been published.

We have recently shown that exposure and allergic sensitization to common pets (cats/dogs) increases of about fourteen times the risk of developing sensitization to other furry animals.<sup>5</sup> This might be due to a possible predisposition to develop multiple sensitization to animal allergens (allergic phenotype?).<sup>5</sup>

A likely explanation for this high prevalence of mammals sensitization in subjects apparently without known contact with animals can be indirect exposure (through transport of animal allergens by the clothes or other items of animal owners into animal-free environments) or a cross-allergic reaction as previously reported.<sup>6</sup> These issues are extremely important in real life and constitute a relevant risk for animal-sensitized patients because they are not aware about the possibility of inducing respiratory symptoms after occasional exposure to animals.

In conclusion, the abovementioned considerations suggest that a generalized allergic reaction occurred in a patient highly sensitized to cat allergens during a big cats exhibition at the circus cannot be considered “unexpected” but certainly “predictable” either for cross-reactivity with big cats allergens or for allergens of other animals living at circus. In several occasions we have suggested that individuals already sensitized to common pets should perform SPTs/evaluation of specific IgE antibodies also to less common mammalian allergens to identify the occurrence of allergic sensitization and consequently to avoid future exposures to these animal allergens also in different settings such as pet shows, farms, wild parks or zoos.

#### Authorship

All authors contributed equally in the writing and revision of the manuscript.

## Conflict of interest

All authors declare that they have no conflict of interest and that the study has been carried out without any financial support.

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## When should the skin prick tests not be performed?



To the Editor,

We read with interest the article from Babayigit Hocaoglu et al.<sup>1</sup> showing the onset of anaphylaxis a few minutes after performing skin prick test (SPT) with common inhalant allergens in a nine-year-old boy suffering from chronic cough and recurrent wheezing episodes.

From a general point of view we concur with the authors that SPT is a very safe procedure when inhalant allergens are used, in comparison to the use of food extracts/fresh foods. The rate of non-fatal reactions by using SPT with aeroallergens ranges between 0.02%<sup>2</sup> and 0.4%.<sup>3</sup> We have found one anaphylactic reaction in 55,000 patients (684,306 allergens tested).<sup>4</sup> Although it is not related with this case-report, we have also emphasised the risk of generalised allergic reactions to skin prick testing in poly-sensitised individuals and in those who underwent SPT using fresh foods [prick-prick-test – PPT],<sup>5</sup> as mentioned before in a comment on an article of Norman G et al. describing adverse reactions and possible risk factors to skin prick testing in children.<sup>6</sup>

However, literature data and our clinical experience suggest that even SPT (for inhalant allergens) might induce generalised allergic reactions in some cases and children are at higher risk than adults.

We think that the main risk factor for anaphylaxis in the case-report of Babayigit Hocaoglu et al. is the asthmatic condition itself. Although the boy has been described as "asymptomatic" at the time of SPT performing because physical examination and pulmonary function tests were "normal", his recent anamnestic background should have been considered with more attention.

In the previous two months, the patient had reported two visits to an emergency unit for wheezing and cough because these symptoms were not adequately controlled by chronic therapy, if taken. In fact, the authors do not report any anti-asthma medications after the emergency visits. On the other hand, a very high degree of bronchial hyperreactivity might be present with normal physical examination and pulmonary function tests within normal limits.

Unfortunately a bronchial challenge to evaluate the degree of bronchial hyperreactivity has not been performed and, consequently, we have no information on this aspect. However, it is well known that highly reactive individuals, especially children, show a high variability of bronchial calibre in response to different triggers; a rapid and sometimes severe bronchial obstruction might be induced even in the absence of clinical and/or functional signs.<sup>7</sup> Moreover, it has been shown that patients suffering from severe asthma or those with an high degree of bronchial hyperreactivity are at increasing risk of developing anaphylactic reactions in comparison to less severe asthmatics or normal individuals.<sup>8,9</sup> The results of cutaneous and serological diagnostic tests (presence of large wheals with pseudopodia, high total serum IgE [310 kU/L], specific IgE levels over 90 kU/L [class 5]) showed a very high degree of allergic sensitisation to the allergens of dust mites. These findings confirm previous reports that the risk of severe respiratory symptoms is significantly higher in highly sensitised individuals.

In other words, previous episodes of respiratory symptoms requiring hospital admission, a history suggesting a high degree of allergic sensitisation, or the possibility of a poly-sensitisation should induce allergists to avoid performing in vivo tests also in the absence of respiratory symptoms.