ASTHMA OF RECENT ONSET IN A 43 YEARS-OLD LADY

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CASE REPORT

A 43 years-old woman was referred to our Allergy Department by her general physician for a 6 months history of asthma and blood eosinophilia.

She reported cough, wheeze and shortness of breath daily that were initially treated with inhaled salbutamol. Rhinoconjunctival symptoms were absent and fever has not been associated. She had presented two severe exacerbations that required emergency care assistance with oxygen, nebulised salbutamol and budesonide, and systemic corticosteroids. Afterwards treatment with inhaled budesonide 160 µg and formoterol 4.5 µg twice a day was started by her general practitioner. Adherence to treatment was poor and the patient needed to use the salbutamol inhaler everyday.

Non-steroidal anti-inflammatory drugs (NSAIDs) were well tolerated, and she denied the intake of any medication. She smoked around 10 cigarettes a day. She had never suffered any relevant illness, she had never travelled abroad, and she had no personal or family history of atopy or asthma.

She worked as a housekeeper and reported worsening of her asthma symptoms when she returned home in the evening. She had noticed an important improvement during a 3 days holiday away from home. Exposure to potential indoor allergens was carefully collected and the only relevant data were the presence of an iguana pet at home for 4 years and a dog for the last year. Cockroaches had been observed at home in the last 6 months.

The physical exam was normal including cardiopulmonary auscultation.

WHICH DIAGNOSTIC STEPS WOULD YOU TAKE?

First visit:
We performed a basal spirometry and skin prick tests (SPTs) to a battery of common inhalants that included mites, molds, cat and dog dander, cockroach, and pollens of grasses, weeds and trees.

Forced basal spirometry was normal with a FVC of 3.66 l (116%), a FEV₁ of 2.82 l (103%), and a FEV₁/FVC of 77%. FEV₁ was not modified by inhaled salbutamol. SPTs to inhalants were negative.

The patient was instructed to monitor the peak expiratory flow rate (PEF) until the next visit to the clinic, and some laboratory and X-ray studies were performed.

Second visit:
Sinus and chest X-ray were normal.

Whole blood count revealed no abnormalities except blood eosinophilia (1903/mm³).

Biochemical blood determinations were normal, as well as urine test.
Parasites in feces (3 samples) were negative. Total IgE was 764 kUA/l. Immunoglobulin G, A and M were normal. Alfa-1 antitrypsin was normal. Specific IgE (CAP) to cat dander, dog dander and cockroach were negative. The PEF monitoring during 12 days revealed the presence of variations greater than 20% within the same day, in spite of been treated with budesonide 320 µg and formoterol 9 µg twice a day. During the second visit we performed a methacholine bronchial challenge test to quantify the degree of non specific bronchial hyperreactivity. The PC$_{20}$ methacholine was 2.50 mg/ml.

**WHAT IS YOUR DIFFERENTIAL DIAGNOSIS IN THIS PATIENT?**

In this patient we demonstrated the presence of bronchial hyperreactivity and eosinophilia. The differential diagnosis in such a case comprise:

1. **Asthma** (the most common)
   - Allergic asthma (extrinsic asthma)
   - Non-allergic asthma (intrinsic asthma).

2. **Pulmonary diseases** (less frequent)
   - Chronic obstructive pulmonary disease
   - Chronic cough with eosinophilic bronchitis without asthma
   - Interstitial pulmonary fibrosis
   - Drug and toxin-induced eosinophilic lung diseases
   - Helminth and fungal infection-related eosinophilic lung diseases
   - Allergic bronchopulmonary aspergillosis
   - Chronic eosinophilic pneumonia
   - Churg-Strauss syndrome
   - Eosinophilic granuloma
   - Pleural eosinophilia
   - Others forms of pulmonary eosinophilia: neoplasm, tuberculosis.

3. **Hypereosinophilic syndrome** (very infrequent)

   Taking into account the medical history of the patient, and the results of the studies performed, the most probable diagnosis in a 43 years-old female starting at that age with asthma is **intrinsic asthma**.
However, the patient had an elevated total IgE and a consistent history of exacerbations at home together with an improvement of her asthma symptoms during a 3 days holiday away from home.

**COULD AN INDOOR ALLERGEN BE INVOLVED IN THIS PATIENTS’ ASTHMA?**

The patient referred worsening of the asthma symptoms at home, especially during the evening when she returned home from work. She noticed everyday shortness of breath, wheeze and coughing while sitting in the sofa in her living room after dinner, and she needed inhaled salbutamol. Six months prior to the onset of asthma a dog was introduced at home, and at the same time the iguana terrarium that had been for 3 years in her son’s bedroom, was moved to the living room and placed by the sofa. She did not refer any symptoms (cutaneous, ocular, nasal or bronchial) in contact with the dog, but when her husband cleaned the iguana’s terrarium she felt chest discomfort and dyspnea. Furthermore, during a 3 days holiday away from home, without contact with her pets, she had no bronchial symptoms and did not need inhaled salbutamol. SPT and CAP to dog were negative, as well as a specific bronchial provocation test (BPT) with dog dander extract.

No commercial iguana extracts are available for SPT, neither for serum determination of specific IgE, and it was not possible for our patient to obtain urine or scales of her iguana. However, Dr. Javier Subiza (Madrid, Spain) kindly provided us with a 10% w/v green iguana extract that elicited a positive SPT reaction at 15 minutes (7 mm mean wheal diameter) in our patient, whereas no reaction was observed in controls.

A specific BPT with the iguana extract was carried out. After the inhalation of a 1/3 dilution of the 10% w/v iguana extract the patient experienced a 21% fall in FEV$_1$ at 15 min, that was followed by a 35% fall of PEFR at 5 hours (Figure 1)
Fig 1. Specific Bronchial Provocation Test with iguana extract

![Graph showing % fall in FEV1 and PEF over time after challenge, with stars indicating inhalation of salbutamol.](image-url)
Sputum and serum eosinophil cationic protein (ECP) determinations were performed before and after the specific BPT. Basal ECP values in serum and sputum were 40.6 and 46.8 μg/l, respectively. Twenty four hours after the iguana BPT the serum and sputum ECP values raised to 90.3 and 173 μg/l, respectively (Figure 2).
We performed an SDS-PAGE IgE Immunoblotting with the iguana extract, and two IgE binding bands were identified with molecular weighs around 50 and 60 kDa (Figure3)

**Fig. 3.** SDS-PAGE–IgE immunoblotting of Iguana extract

*MW*: molecular weight; *A*: SDS-Page; *B*: Immunoblot
WHAT IS YOUR DIAGNOSIS NOW?
Allergic asthma due to iguana

FOLLOW UP

The patient removed the iguana from home the day after the BPT and started treatment with budesonide 320 µg and formoterol 9 µg twice a day. Twenty four hours later her symptoms resolved and she stopped needing rescue inhaled salbutamol. A PEF monitoring performed in the 2 following weeks revealed normal values with no significant variations within the same day.

Non-specific bronchial hyperreactivity and serum and sputum ECP were assessed 6 and 15 weeks after stopping exposure to iguana (Figure 2). At 6 weeks the $PC_{20}$ methacoline was 6.50 mg/ml, and serum and sputum ECP were 10.50 and 9.29 µg/l, respectively. Eosinophil count in blood was within normal limits (441/mm$^3$).

Formoterol was then stopped, but the patient remained under treatment with budesonide 400 µg twice a day for one month, then reduced to 200 µg twice a day. At 15 weeks the $PC_{20}$ methacoline was 16.44 mg/ml, and serum and sputum ECP were 21.0 and 28.1 µg/l, respectively. Budesonide had been stopped 10 days before the last cigarettes a day.

DISCUSSION

Furry animals are a common source of allergens, but little is known about the allergenicity of scaly animals. To the best of our knowledge only 2 cases of respiratory allergy to iguana have been published in the medical literature$^{1,2}$. In contrast to our patient the 2 reported cases presented rhinoconjunctivitis together with asthma.

Two additional cases have been reported in Spain but not published so far in indexed journals. However, with the gain in popularity of exotic pets, such as iguanas or other reptiles, the incidence of allergy to these animals may increase and allergists should be aware of their potential as “new” indoor allergens.

We present a case of asthma and eosinophilia with onset in a non-atopic adult woman. The routine allergological evaluation was negative, but the patient presented an elevated total IgE, had pets at home, and when carefully questioned reported worsening of her asthma at home, improvement away from home, and data suggesting the potential involvement of the iguana in her symptoms (Figure 4).
Indeed, we have confirmed that the patient presented an IgE mediated asthma due to the green iguana she had at home. After the removal of the iguana the patient has been followed for 15 weeks and we have been able to demonstrate a clinical improvement corroborated by the normal PEF monitoring, together with a reduction in bronchial inflammation (decrease in sputum ECP) and a parallel decrease in bronchial hyperreactivity (increase of PC20 methacholine). Without a full allergological evaluation this patient would have been diagnosed as having an intrinsic asthma and would have only received anti-asthmatic medication with a probably poor control of her asthma.

This case report stresses the importance of the correct etiologic diagnosis in asthma, since the identification and subsequent avoidance of the culprit allergen is a key prognostic factor that can modify the disease progression – persistent inflammation, airway remodelling – and the prognosis of the patient.

Fig. 4. The patient’s iguana looking through the window from the sofa
SUMMARY
We present a case of allergic asthma in a non-atopic adult female due to an uncommon pet, a green iguana. The patient presented a moderate asthma and eosinophilia and reported worsening of the asthma symptoms at home. She had positive skin prick tests to an iguana extract, and the diagnosis was confirmed by a specific bronchial provocation test, and supported by the assessment of bronchial inflammation by means of sputum and serum ECP. After removal of the home iguana the patients’ symptoms disappeared, she had normal lung function tests and the airway inflammation and the bronchial hyperreactivity subsided. This case report stresses the importance of the correct etiologic diagnosis in asthma, since the identification and subsequent avoidance of the culprit allergen can modify the disease progression – persistent inflammation, airway remodelling – and the prognosis of the patient.

REFERENCES


