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A silk cardigan inducing asthma

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Key words: asthma; silk; wild silk.

● WILD silk allergy has been described in recent years as a cause of nightly asthma due to contact with bedcovers containing wild silk or silk waste (1). Possible allergens are either products or parts of the silkworm *Antheraea pernyi*, the producer of true wild, or tussah, silk, or of *Bombyx mori*, the producer of cultivated silk in the case of wrongly labeled products. Another possible allergen derives from an insect of the genus *Anthrenus*, which feeds on cocoons and other insects and has been found as a contaminant in silk waste-containing bedcovers (2).

In addition to bedcovers, silk is used in a variety of products, such as fillings in jackets or sleeping bags and clothing such as scarves and ties. Here we describe a patient who developed asthma while wearing a silk cardigan.

During a summer vacation in Ireland, a 27-year-old woman suffered from asthmatic

symptoms during a train ride from Cork to Limerick. These symptoms occurred also upon her return to Switzerland. The patient noticed asthma during the daytime in increasing frequency, finally causing her to consult a general practitioner, who referred her to our department.

In her personal history, wild silk sensitization causing asthma during the night had been diagnosed years before. The patient had since then removed the bed quilt and all other wild silk-containing materials from her home.

Skin prick testing of a screening series revealed a positive reaction to wild silk (++++). Specific IgE (CAP-FEIA, Pharmacia Upjohn, Uppsala, Sweden) for wild silk was 17.7 kU/l; for silk, 3.7 kU/l. In addition, specific IgE for mugwort was 4.12 kU/l and for a screening test for domestic allergens Rx2 (cat and horse epithelia, dog dander, *Dermatophagoides farinae*, and *Alternaria*), 0.68 kU/l. Lung-function and bronchial provocation tests with methacholine were normal.

At first, pollen sensitization seemed to offer an explanation, as the symptoms had started during a train ride with open windows, but, as symptoms persisted during autumn and winter, this became improbable. On further questions about new items, the patient showed a new cardigan, seemingly made of

wool or cotton, she had bought during her day trip to Cork. Inspection of the label revealed that the cardigan had been made in China and contained 20% cotton and 80% silk. Skin prick testing of some fibers of the cardigan eluted in water (Fig. 1) gave a strongly positive reaction (+++).

We diagnosed asthma induced by silk sensitization. As the cardigan had become one of the patient's favorite clothes, which she had been wearing more and more often, thus carrying the allergen with her, an increasing frequency of asthmatic symptoms had developed. When she stopped wearing the cardigan, the asthmatic symptoms disappeared completely.

Silk allergy in the silk industry affecting mainly spinners and weavers has been recognized for years, while allergic reactions of consumers on a large scale have been reported for the first time with occurrence of nightly asthma caused by silk waste-containing bed quilts.

Allergy to silk clothing is rare, since washing and heating of the silk in an alkaline environment for better separation of the silk thread formed by two fibroin filaments glued together by sericin, removes the sericin, which is the main allergen. Removal of the sericin often is done after spinning and weaving, as it offers a good protection against mechanical friction during processing.

Fibroin, the protein substance of silk, has a low allergenic potential. Scarves, ties, and



Figure 1.

other clothes made of washed silk are safe for the consumer, and only single cases of allergy to silk clothes were reported in the 1930s (3–5).

A series of children with asthma induced by silk waste-filled jackets has been observed in China (6). The cardigan of our patient contained no silk waste but seemingly was made of unwashed mulberry silk or wild silk, resulting in a “cotton or wool appearance”, while still containing the allergen.

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Selective type-1 hypersensitivity to cefixime

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Key words: adverse reaction; cefixime; cephalosporins; hypersensitivity; skin test.

● CEFIXIME is a third-generation cephalosporin antibiotic widely used both in

children and in adults since it can be given orally once a day. The adverse effects most frequently reported are gastrointestinal disorders, particularly diarrhea (1).

Hypersensitivity reactions are rare; the only case of selective allergic reaction to cefixime reported to date consisted of an anaphylactic reaction with

positive skin tests in which a provocation test was not performed (2). A patient with a selective allergic reaction to cefixime demonstrated by positive skin tests and oral challenge is reported.

A 32-year-old woman was prescribed cefixime tablets (200 mg b.i.d.) for pharyngitis. Fifteen minutes after taking the first tablet, she suffered itching, generalized urticaria, and angioedema of her face and hands. She attended the emergency room where 6-methylprednisolone (40 mg i.m.) and dexchlorpheniramine (5 mg i.m.) were administered. The symptoms resolved completely in 24 h. Before this episode, she had tolerated amoxicillin, but she denied any

previous treatment with cephalosporins. Her personal and family histories were negative for allergic disease.

An allergologic work-up was performed 1 year after this episode.

The patient underwent skin tests (prick and intradermoreaction) with penicilloyl-polylysine and minor determinant mixture (Allergopen, Merck, Reinbeck, Germany), sodium penicillin G, ampicillin, amoxicillin, cefuroxime, cefazoline, cefonicid, ceftriaxone, and cefixime.

Prick tests were performed on the volar forearm. Reactions were considered positive when wheals greater than 3 mm in diameter were present 20 min after testing. Intradermal solutions of the drugs at 10^{-2} and 10^{-1} were injected when prick tests were negative. Wheals greater than 5 mm in diameter at 20 min or 48 h were considered positive. Positive skin prick with histamine (10 mg/ml) and negative control with saline were performed and interpreted according to the same criteria used for β -lactam testing.

All the drugs tested proved negative except for cefixime (Table 1). Prick tests with 200 mg/ml of cefixime were administered in

Table 1. Results of skin prick and intradermal (ID) tests with different β -lactam antibiotics and their concentrations

Drug	Doses	Prick	ID (1/100)	ID (1/10)
Benzylpenicillin	10 000 U/ml	neg	neg	neg
BPO	5×10^{-5} mol/l	neg	neg	neg
MDM	2×10^{-2} mol/l	neg	neg	neg
Amoxicillin	20 mg/ml	neg	neg	neg
Ampicillin	20 mg/ml	neg	neg	neg
Cefuroxime	125 mg/ml	neg	neg	neg
Cefazoline	250 mg/ml	neg	neg	neg
Ceftriaxone	200 mg/ml	neg	neg	neg
Cefonicid	200 mg/ml	neg	neg	neg
Cefixime	2 mg/ml	neg		
	20 mg/ml	neg (itching)		
	200 mg/ml	5×5^a		
Controls				
Histamine	10 mg/ml	4×4^a	NP ^d	NP ^d
Saline		neg	neg	neg

BPO: penicilloyl-polylysine; MDM: minor determinant mixture; NP: not performed.
^aWheal diameter in millimeters.