

Key words: allergy; ant; insect bite.

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Accepted for publication 2 November 1996

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ALLERGY 1997;52:230-231

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Occupational asthma caused by black henna

WE REPORT the case of a 35-year-old woman who complained of rhinorrhea, sneezing, nasal obstruction and itching, hyposmia, dysphonia, conjunctivitis, and dry cough at work for 1 year. She had worked in an herbal shop for the past 5 years. The above symptoms began 1 year before and became more intense with time. The patient subsequently complained of frequent episodes of wheezing, cough, and dyspnea at the workplace; the dyspnea also awakened the patient frequently at night. The patient reported that the symptoms lessened when she stayed away from work and that they worsened at work when she inhaled the powder of black henna (*Indigofera argentea*), a species of henna that is botanically distinct from the more common red henna (*Lawsonia inermis*) frequently used as a hair dye and known to cause occupational sensitization in hairdressers (1, 2). Initially, the patient had sold red and black henna in vacuum-sealed packages. Two years before symptoms appeared, the patient had begun selling loose powdered henna (red and black).

She had been treated with inhaled salbutamol

and beclomethasone dipropionate with only minor improvement of her dyspnea.

History was negative for atopy. Skin prick tests (SPT) with the more common aeroallergens yielded negative results ex-

cept for a 2.5-mm mean wheal diameter for grass pollen; 1% histamine and glycerin solutions were used as positive and negative controls, res-

pectively (histamine mean wheal diameter, 10 mm). SPT performed with a 1/10 dilution of the black henna powder produced a wheal that was half the diameter of the histamine wheal (SPT was first performed with 1/1000, 1/100 dilutions); SPT with red henna was negative at the above dilutions. Total IgE antibodies were elevated: 950 IU/ml. Specific IgE were positive for grass pollen (class 3) and negative for other common aeroallergens; specific IgE for henna were also ascertained by RAST: red henna was negative; black henna was positive (class 3).

Spirometry revealed the presence of moderate bronchial obstruction that was reversible after the inhalation of a β_2 -agonist. Bronchial challenge with methacholine showed a high degree of bronchial hyperreactivity; $PD_{20}FEV_1 = 115 \mu g$. A significant broncho-obstructive response was also obtained after inhalation of ultrasonic fog.

For evaluation of the objective relationship between symptoms and work, the patient was instructed to measure peak expiratory flow (PEF) for 15 days at work and 15 days away from work (3). At the end of the above period, during which PEF was monitored, the patient reported having been free of symptoms when away from work, and that dyspnea reappeared during the day and at night during the 15 days at work in the herbal shop. The variation in mean PEF and diurnal variability agreed with the above pattern of symptoms: during the work period, intraday variability was significant (>20%), and the mean PEF value was below the theoretical value for height and age.

On the basis of the clinical history, specific SPT and RAST positivity, and the positive pattern of PEF measurements, the diagnosis of occupational asthma to *I. argentea* was made (4). The patient was advised to return to work after elimination of the containers of *I. argentea*. She was prescribed treatment with budesonide 400 mg b.i.d., salmeterol 50 μg b.i.d., and salbutamol 200 μg p.r.n.

At a control visit 2 months later, the patient reported an improvement of her respiratory symptoms, although dry cough persisted during the night; she had not used salbutamol p.r.n. She no longer

*The first report of
allergic asthma in a
woman working in an
herbal shop.*

complained of oculorhinitis. The mean PEF value was just below the theoretical value, and intraday variability was not significant (<20%); methacholine challenge revealed unchanged bronchial hyper-reactivity; $PD_{20}FEV_1 = 103 \mu g$.

Our patient's sensitization to grass pollen suggested the possibility that the positivity to black henna could have been due to a cross-reacting immunoglobulin directed at grass pollen. However, no such cross-reactivity has been reported in the literature; moreover, the absence of seasonal allergic symptoms suggested that grass pollen sensitization was not clinically significant in our patient.

To our knowledge, this is the first report of occupational asthma due to black henna in an herbal shop worker. This case is further distinguished from previous reports of sensitization to henna by the detection of IgE antibodies to the black variant of henna, *I. argentea*, and not the more common form of henna, *L. inermis*, used by hair-dressers. The different botanic origin of the two plants is the most likely explanation of the unique sensitization to the species belonging to the genus *Indigofera*.

Key words: black henna; occupational asthma; red henna.

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Accepted for publication 5 November 1996

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ALLERGY 1997;52:231-232

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allergens later in life in atopic subjects. As no such study has been done in India, we investigated the sensitivity of respiratory allergy patients to pollen allergens present during their birth month.

■ A detailed questionnaire was prepared on age, occupation, family history, age of onset (disease), duration of illness, worst season, address, and birth month. All 318 patients referred to a clinician in 1994 were interviewed at the V.P. Chest Institute, Delhi, India. The data could be recorded for 303 patients. The diagnosis of rhinitis was assigned to patients having three

The first study in India of pollen allergy in relation to month of birth.

or more of the following symptoms: 1) postnasal drip; 2) watery nasal discharge; 3) sneezing; 4) itching of nose; and 5) nasal congestion. The recommendations of Broder et al. were followed to identify cases of bronchial asthma (4). For diagnosis, spirometric evidence of airway obstruction (<80% of the predicted FEV_1) and more than 15% reversibility in FEV_1 with salbutamol metered-dose inhalation (200 μg) were also considered. The patients were subjected to intradermal (ID) tests with extracts of 32 pollens, 13 fungi, six insects, and six dusts/danders used in routine allergy diagnosis. The extracts tested were relevant to patients' birthplace, and some of them (pollen) were incidentally airborne in the birth months of patients. ELISA was carried out with patient sera, showing marked positive skin response to pollen allergens prevalent during their birth month. As a negative control, sera from nonallergic subjects (NHS) were also tested. For grading, OD greater than mean plus 2 SD of NHS (OD 0.17) was taken as ELISA positive.

■ Of the 303 patients screened, 167 complained that their birth month was the worst period for asthma and rhinitis. Among them, 141 showed positive ID reactions to one or more pollen allergens prevalent in their birth month. Of 303 patients, 246 exhibited positive skin sensitivity to the various allergen extracts tested, whereas 57 patients showed negative ID tests. Of the 246 patients, 211 exhibited markedly positive skin reactions to one or more pollen allergens prevalent in their birth months. Many had been born in major pollen seasons; i.e., February–April (25.1%) and July–October (42.1%). The period from July to October is dominated by pollen of weeds (*Amaranthus spinosus* and *A. hybridus*) and grasses (*Cenchrus ciliaris*, *Cynodon dactylon*, *Pennisetum typhoides*, and *Sorghum vulgare*). The season from February to April is marked

Relevance of birth month in respiratory allergy

STUDIES carried out in Western countries (1–3) indicate that exposure to allergens in early infancy leads to increased sensitization to these

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