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A case of immediate hypersensitivity reaction with tungsten

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Key words: immediate hypersensitivity reaction; scratch test; tungsten.

Hard metal workers occasionally develop symptoms of asthma that are similar in their clinical manifestations to other forms of occupational asthma (1). The prevalence of hard metal-related asthma is low. Skin

Immediate hypersensitivity reaction with tungsten.

patch tests with cobalt or other metal salts have been used extensively for determining the cause of an occupational dermatitis, but are of questionable usefulness in patients with hard metal asthma.

The first case of immediate hypersensitivity reaction with tungsten is reported below.

On March 5, 2002, a 25-year-old man visited our hospital for an examination to determine the cause of dyspnea. Prior to obtaining a job as an office worker his health was normal. However, in order to complete his job-related duties he was occasionally required to enter a room where hard metal dust, including tungsten, was present. One and a half years after having entered this room for the first time, he complained twice of dyspnea. The first time, on February 1, 2002, he improved without medication. Yet, the second time, on February 13, 2002, he was transported to our emergency center with dyspnea. Upon examination, the patient showed a blood pressure of 136/69 mmHg and an oxygen saturation of 95% while breathing ambient air. Furthermore, the lungs were clear and a chest radiograph showed no remarkable change. His white blood cell count was 8540/mm³ with 3.9% eosinophil. Serum IgE was 717 IU/ml. A lymphocyte stimulation test with tungsten was negative. After being treated with an intravenous drip and corticosteroid, the patient recovered well.

We examined him with the use of a scratch patch test with W2 (tungsten), G8 (75% tungsten carbide and 25% cobalt), GF40 (81.8% tungsten carbide, 18% cobalt, and 0.18% vanadium carbide), H1 (92% tungsten carbide, 2% tantalum carbide, and 6% cobalt), and a control (physiological saline). Ten minutes after having completed the test, the lesion created by the scratch test revealed an urticaria, but the control was negative (Fig. 1). Thereafter, he complained of feeling ill, and having a general urticaria, as well as dyspnea. After being treated with 3 l/minute oxygen and an intravenous drip and corticosteroid, his condition improved greatly. He rejected further examinations; patch and open patch test with tungsten.

In this case, the patient had an asthma caused by metal dust, and the results of a scratch test revealed tungsten to be the



Figure 1. The results of a scratch test. All materials including tungsten revealed a clear scratch mark induced by an urticaria, but the control (C) revealed no scratch mark.

cause of asthma. We cannot find another case report of tungsten-induced occupational asthma. In fact, we found only one case report of the immediate-type hypersensitivity reaction associated with metal (nickel) (2). That case revealed a positive reaction using the scratch test, while negative reactions employing the patch test, open patch test, and closed patch test. Additionally, Rystedt et al. (3) reported no allergic reactions to tungsten in an investigation of 853 individuals using the patch test. This is the first case of an immediate-type hypersensitivity reaction with tungsten.

We reported lymphocytoma cutis induced by cobalt (4) which is a manifestation of delayed-type hypersensitivity, in which the patch test and the lymphocyte stimulating test were helpful in diagnosis. The complex halide salts of platinum, nickel, chromium, and cobalt are known to induce asthma. There is good evidence for an immunoglobulin E-mediated mechanism in platinum salt asthma (5). Furthermore, Novey et al. (6) reported asthma and specific IgE antibodies induced by chromium and nickel salts. The examination of specific IgE antibodies to the provocative metal agents is difficult, because it is not easily obtained. The scratch test is a very easily administered and useful way to determine the cause of metal asthma.

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Evidence of desloratadine syrup efficacy and tolerability in children with pollen-induced allergic rhinitis

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Key words: children; rhinitis; asthma; desloratadine syrup; efficacy.

The new antihistamine desloratadine (DL) was shown to be effective and safe (1), but data in children are still few. The syrup formulation of DL has become recently avail-

Desloratadine syrup is effective in children with allergic rhinitis and asthma.

able, and positive data have been reported (2). We assessed, in an open trial, the efficacy and safety of DL syrup in paediatric patients.

Children aged 6–12 years were enrolled. They all suffered from seasonal allergic rhinitis for 2 years at least, with or without concomitant intermittent asthma. The allergic sensitization was documented by the positivity of skin-prick tests to pollens including grasses, *Parietaria*, olive and birch. All the patients were treated for 4 weeks with DL syrup 2.5 mg daily during the 2003 pollen season. Nasal, non-nasal (rhinorrhea, itching, sneezing, congestion, ocular itching and redness) and asthma symptoms (wheezing, difficult breathing, cough, chest tightness) were graded from 0 (none) to 3 (severe). Patients had to have a total symptom score ≥ 8 with a nasal congestion score ≥ 2 , and a non-nasal symptoms score ≥ 2 at baseline. The protocol was approved by the ethical committee.

Fifty-four children (age 9.0 ± 1.7 years, 63% male, height 136.7 ± 10.5 cm, weight 35.2 ± 10 kg) were enrolled; 75% of patients were polysensitized, 67% suffered from eye symptoms, and asthma was present in 76% of patients. Forty-nine children concluded the study, five were withdrawn (four because of unrelated adverse events and one because of protocol ineligibility).

The upper panels of Fig. 1 reports patient distribution over the symptom severity scale during the study, and the lower panels report lower airway symptoms. Rhinorrhoea, sneezing, stuffiness and itching were reduced in a considerable proportion of children. Almost all children were free of cough at the end of treatment and lower airway symptoms similarly subsided. In addition, the need for short-acting beta-2-agonist was reduced in patients with concomitant asthma symptoms. A positive correlation was observed between the reduction of the cough score and the sneezing score ($r = 0.70$; $P = 0.011$), thus supporting the strict link between upper and lower airways. Eye symptoms disappeared in almost all children after DL treatment.

A total of 22 adverse events were reported in 13 children. One case of insomnia and one of diarrhoea were considered possibly related to treatment. Vital signs (blood pressure, pulse, tem-

perature, breath rate) were monitored during the study and no relevant change in any of these parameters was observed. This confirms the excellent safety profile of DL syrup in young children also.

This study provides preliminary original data about upper and lower airway symptom improvement in children with respiratory allergy after a 4-week treatment with DL syrup at the dose of 2.5 mg once a day during the pollen season. Desloratadine syrup was effective in reducing nasal symptoms, including nasal obstruction. This observation is in agreement to what was reported in adults by Horak et al. (3). In children with coexisting asthma and/or conjunctivitis, DL also induced a significant improvement of asthma and eye symptoms and a reduction of the need for rescue bronchodilators, as reported in adults by Berger et al. (4). This is in line with the proposed strategy of combining the treatment of lower and upper airway disease reported in the ARIA document (5). DL was well tolerated and most of the adverse events were mild in severity and experienced by a small proportion of patients. Thus, DL met the requirements for antihistamines proposed by EAACI/ARIA (1) also in children.

This study is not randomized and not controlled, therefore our findings need to be confirmed with a rigorous design. Nevertheless, given the number of patients, the results worth of interest, as they provide, for the first time, evidence of the efficacy and safety of DL syrup in children.

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