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Asthma and hay fever

Asthma induced by nickel

Block GT, Yeung M: *JAMA* 247:1600, 1982.

Although allergic contact dermatitis from nickel is seen frequently, asthma due to nickel sulfate exposure is rare with only one case reported to date. The present report concerns a 60-year-old male metal polisher for 36 yr, who had during that time considerable contact with gold, brass, and nickel. At age 49, his work was changed to polishing nickel-plated bumpers. After being on this job for 11 yr, he began to experience a cough productive of purulent sputum, fever, dyspnea, and wheezing and had increased bronchial markings on chest x-ray as well as dermatitis of the hands for the previous 8 yr. Patch tests gave positive reactions to mercaptobenzothiazole and a mercapto mix and the patient was advised to discontinue work. After 2 mo work avoidance, he was found to be asymptomatic, with normal laboratory findings including total IgE level chest x-ray, and pulmonary function tests. He was then permitted to return to work. A nonproductive cough, tightness of the chest, and shortness of breath were noted after 2 hr on the job as well as daily while at work and improved while away from his employment. Pulmonary function studies became abnormal after 8 hr on the job, suggesting that the symptoms were work related. Prick skin tests with 25 common allergens were all negative but a test with nickel sulfate (10 mg/ml) gave a positive immediate reaction. A patch test with environmental dust was negative but inhalation of this dust reproduced the chest symptoms after 8 min exposure; the FEV₁ fell 28% within 5 min but returned to within 3% of base at 35 min. No secondary reaction was noted in the following 24 hr. Bronchoprovocation tests with nickel sulfate carried out on 2 separate days induced immediate bronchoconstriction without a delayed response.

The immediate reaction to the nickel sulfate is believed to be type I mediated by short-term sensitizing IgG. The presently described patient failed to show any evidence of IgG or IgM antibodies by hemagglutination studies or gel diffusion because nickel is a low-molecular-weight element and probably acts as a hapten.

H. J. F.

Effects of oral theophylline and oral salbutamol in the treatment of asthma

Dawson KP, Fergusson DM: *Arch Dis Child* 57:674, 1982.

The recent unexplained increase in asthma-related deaths in New Zealand has generated concern about the safety of the combined use of oral theophylline and salbutamol in the treatment of asthma; this study investigated the effects of oral theophylline alone, as compared to combined oral theophylline and salbutamol in asthmatic children.

The study group was composed of 30 asthmatic children (5 to 13 yr old) who were assigned in a randomized, double-blind manner to one of two treatment regimens: (1) one dose of oral theophylline alone (7 mg/kg); (2) one dose of theophylline (7 mg/kg) and salbutamol (0.1 mg/kg). Each patient had measurements of serum theophylline, pulse, and peak flow rates prior to drug administration and after 90, 120, 180, and 240 min. Patients receiving theophylline and salbutamol in combination had, in comparison to the theophylline alone group, higher mean pulse rates, lower mean peak flow rates, and lower mean theophylline serum levels. There was no significant difference between the two groups in the mean pretreatment levels of serum theophylline. The authors indicate that combined oral theophylline and salbutamol, administered at maximum recommended dosages, interact to produce tachycardia and di-

minated therapeutic effect and that these results do not support the suggestion that the recently observed increases in asthma deaths result from toxic theophylline serum levels induced by combined drug usage.

S. B.

Emergency room radiography of asthma: an efficacy study

Zievesink SE, Hasper AP, Holden RW, Klatter EC, Brettani H: *Radiology* 145:27, Oct, 1982.

The authors reviewed 997 chest x-rays of asthmatic patients visiting an emergency room over a 4 yr period. Clinical data on each patient were analyzed retrospectively. Twenty-two percent of adult radiographs were abnormal as compared to 13% in children. Abnormalities included infiltrates, atelectasis, pneumothorax, and pneumomediastinum. Clinical data consisting of age, sex, respiratory rate, temperature, cough, and sputum and examination of nose, ears, throat, chest, and WBC at each patient visit were studied. The clinical findings on each patient with abnormal chest x-ray were compared to three groups of patients: (1) same patient during another visit with normal chest x-ray, (2) a visit by the same patient when no x-ray was taken, and (3) a visit by another asthmatic who had a normal chest x-ray. There was no statistical difference among these groups except for the association of rales and rhonchi with abnormal chest x-rays in children. The authors concluded that chest x-ray is useful only in asthmatics unresponsive to bronchodilators or in children when rales and rhonchi are present at chest examination.

Yasmin Bhasin

Immunology

Immunoglobulin A antibody levels in human tears, saliva and serum

Burns C, Ebersole J, Allansmith M: *Infect Immun* 36:1019, June 1982.

The authors of this report studied the presence of IgA and IgG antibodies to the oral microorganism *Streptococcus mutans* in human tears, parotid saliva, and serum and they attempted to determine whether remote-site stimulation via the oral route with *S. mutans* occurred in the ocular system. The presence of *S. mutans* antibodies in tears would suggest that the ocular immune system is involved in a common mucosal system and resembles other mucosal systems in that antigenic stimulation may occur at a site remote from the eye. Fifteen subjects were studied, and IgA antibodies to *S. mutans* in tears, saliva, and serum were determined by a modified indirect, enzyme-linked immunosorbent assay.

IgA antibodies to *S. mutans* were found in the tears of all 15 subjects while salivary anti-*S. mutans*-IgA antibodies were also found at the oral site of antigen exposure as well as

in the serum. While tears and saliva did not differ significantly in amount of antibody activity per volume of secretion, the lacrimal and salivary levels of anti-*S. mutans*-IgA antibodies were significantly lower than in serum. IgG *S. mutans* antibodies were found in tears, saliva, and serum of all subjects. The mean level of lacrimal IgG was significantly higher than in saliva. Significantly lower levels of anti-*S. mutans*-IgG antibodies were found in tears and saliva than in serum. No correlation between levels in serum and tears or serum and saliva was found for either IgA or IgG antibodies. There was a significant correlation between serum IgA and serum IgG levels within subjects. There was also a significant correlation between salivary IgA and IgG levels within subjects, but none between tear IgA and IgG levels.

The results of this study suggest that there is remote stimulation and regulation of specific antibody in the tears. Because the anatomical site of antigen is remote, antigen-driven homing to the eye is unlikely. The authors speculate that nonspecific lymphocyte homing to all mucosal sites and subsequent expansion of antigen-committed cells may be the mechanism of remote stimulation but these have yet to be demonstrated in the ocular mucosal system.

A. J. C.

Pediatrics

Recurrent pneumonia in children and its relationship to bronchial hyperreactivity

Eigen H, Laughlin JJ, Homrighausen J: *Pediatrics* 70:698, 1982.

Since persistent or recurrent pneumonia (PRP) is a common problem in children, this study evaluated the conditions that are frequently associated with its occurrence.

The study group consisted of 81 patients (mean 4.2 yr) with either persistent (25) or recurrent (56) pneumonia; excluded were all PRP patients referred for evaluation of either "possible cystic fibrosis" or "asthma." The patients were subdivided into two groups: group 1 (20) included those with an apparent cause for their PRP and group 2 included those without an apparent cause. Pulmonary function testing (PFT) for FVC, FEV₁, and FEF_{max} was performed in 23 patients; those with an obstructive pattern were retested after inhaling isoproterenol and those with normal pulmonary function were investigated further by methacholine challenge. A decrease of 20% or more in FEV₁ from baseline was deemed a positive response.

Sixty (74%) of the 81 patients had had at least one hospitalization, and 34 (four from group 1 and 30 from group 2) had a personal or family history of allergy. Allergic symptoms were more common in patients with recurrent pneumonia than in patients with persistent pneumonia.

Elevated total eosinophil counts (>250 cells/mm³) were found in 30 of 46 (70%) children, with no significant difference observed between the two groups. None of the patients