The clinical pattern of bronchial asthma in General Hospital, Kandy (Sri Lanka)

R. JEYRAJAH
M.B.B.S., M.R.C.P.(UK)

M. D. N. WICKRAMASINGHE
M.B.B.S.

Department of Medicine, University of Peradeniya, Peradeniya, Sri Lanka

Summary

The clinical features and cutaneous hypersensitivity to skin prick tests were studied in 64 asthmatic patients in General Hospital, Kandy (Sri Lanka). The onset of asthma was mostly in adult life; associated atopic disease and family history of allergy were less frequent when compared with asthmatics in industrialised countries in the temperate zone. In these respects the clinical pattern of asthma in our study resembles that described in other tropical countries. Cutaneous hypersensitivity to one or more of the 10 allergens tested was observed in 75% of asthmatics and 55% of non-asthmatic controls. Although there was a higher incidence of associated allergic disorders, family history of allergy and the onset of asthma before the age of 10 years in the skin test positive group when compared with the skin test negative group of asthmatics, this difference was not statistically significant.

KEY WORDS: bronchial asthma, cutaneous hypersensitivity.

Introduction

Bronchial asthma is a common illness in the tropical countries and a major cause of out-patient attendance and admission (Mitchell, 1970; Buchanan and Jones, 1972). The clinical pattern of this illness in Zaria, Nigeria (Warrell *et al.*, 1975) seems to differ in a few important aspects from that described in industrialised countries in the temperate zone in that it usually started in adult life and associated atopic disease and family history of allergy were uncommon. A high proportion of non-asthmatic control subjects in the tropics show cutaneous hypersensitivity to one or more allergens. This prompted us to study the clinical pattern and cutaneous hypersensitivity to skin prick tests in patients with bronchial asthma at General Hospital, Kandy (Sri Lanka).

Patients and methods

The 64 asthmatics studied consisted of those admitted to medical wards, either with a severe

attack, or with a prolonged attack of asthma who failed to respond to treatment outside hospital, and those attending out-patient medical clinics with frequent attacks needing constant medication. The diagnosis of bronchial asthma was made on a history of paroxysmal, recurrent wheezy dyspnoea which was completely or partially reversible either spontaneously or with bronchodilator drugs. Variability of airways obstruction was observed during regular follow-up at the clinic with the help of history and physical examination. The group of 53 non-asthmatic control subjects studied were age and sex matched and did not have any evidence of obstructive airways disease on history and physical examination. The group consisted of 17 healthy volunteers and 36 patients admitted to the acute medical ward with various illnesses.

Each subject was interviewed and examined by one of the authors with the help of a questionnaire. Skin tests were done using a selected range of 10 allergens supplied by Bencard Laboratory Limited. The modified prick test method of Hendrick *et al.* (1975) was used. Glycero-saline was included as the control. Only immediate type 1 reactions were recorded. The wheal diameter was measured at 10 to 15 min using a transparent calibration plate. The diameter of any wheal produced by glycero-saline control was subtracted from the other results. Wheals of diameter 2 mm or more were regarded as positive (Pearson, 1973).

The control group of 53 non-asthmatics were also tested with the same 10 allergens. The χ^2 test was done for statistical significance. Total and differential white blood cell counts were done in 57 asthmatics and 51 controls. Unconcentrated stool samples were examined for ova in 56 asthmatics and 42 non-asthmatics.

Results

The age in our group of 64 asthmatics ranged from 16 to 70 years with a mean age of 42.9 years. Twenty-five (39%) were males. Mean age of onset of asthma was 26.3 years. In 18 (28.1%) patients, the first attack

TABLE 1. Positive skin prick tests (%) in 64 asthmatics and 53 controls

Allergens	Asthmatics	Controls	P
House dust	62.5	17.0	<0.05
House dust mite	54.7	9.4	<0.05
Hay dust	31.3	18.9	NS
Mixed threshing	42.2	22.6	NS
Mixed moulds	18.8	13.2	NS
Cotton	6.3	3.8	NS
Kapok	17.2	3.8	NS
Dog	23.4	7.5	NS
Cow	25.0	3.8	<0.05
Feathers	23.4	15.1	NS
Positive for one or more of the 10 allergens used	75.0	54.7	NS

NS = not significant.

of asthma occurred before the age of 20 years. There was a history of associated atopic disease, eczema in 3 (4.7%) and allergic rhinitis in 19 (29.7%). Twenty-three (39.9%) admitted to a family history of atopic disease mainly asthma. Among the control group of 53 non-asthmatics, one (1.9%) admitted to a history of rhinitis and 4 (7.5%) had a family history of allergic disorders.

Thirty-seven asthmatics (58%) claimed allergy to one or more articles of food consumed, but challenge studies were not carried out. Cutaneous hypersensitivity to one or more allergens was observed in 48 (75%) asthmatics and 29 (54.7%) controls (Table 1). Positive skin prick test reaction to house dust related allergens (house dust and *Dermatophagoides pteronyssinus*) was observed in 42 (66%) asthmatics and 11 (21%) controls. Comparing the 48 skin test positive asthmatics with the skin test negative group of 16, we found a higher, but not statistically significant, incidence of associated allergic disorders, family history of allergy and the onset before the age of 10 years in the former (Table 2).

TABLE 2. Comparison of 48 skin test positive and 16 skin test negative asthmatics

History	Skin test positive (%)	Skin test negative (%)	P
Associated allergic diseases			
rhinitis	16 (33.3)	2 (12.5)	NS
eczema	3 (6.3)	0	NS
Family history of allergy	19 (39.6)	4 (25)	NS
Provoking factors			
animals	5 (10.4)	0	NS
food	32 (66.7)	5 (31.3)	<0.05
Onset before 10 years of age	10 (20.8)	2 (12.5)	NS

NS = not significant.

Round worm or hook worm ova were found in 7 (12.5%) of the stools of the 56 asthmatic patients examined and in 12 (28.6%) of the 42 control subjects. The blood eosinophil counts were raised

(above 400/mm³) in a significant percentage of asthmatics (64.9%) as opposed to controls (33.3%).

Discussion

In certain aspects, the clinical features of bronchial asthma in our study differ from those described in industrialised countries in the temperate zone (Table 3). In Kandy, it starts mainly in adult life, and associated allergic disorders and family history of allergy appear less frequent. This pattern is similar to that described in Zaria, Nigeria (Warrell *et al.*, 1975) and New Guinea (Anderson, 1974).

Bronchial asthma has been divided into two varieties: extrinsic, in which external allergen can be demonstrated, and intrinsic in which it cannot. In patients with intrinsic asthma IgE is normal or low, the symptoms usually begin in adult life, the asthma is chronic and continuous and there is less personal and family history of allergic disorders when compared with the extrinsic group. Hendrick *et al.* (1975) found in a majority of skin test positive patients that the asthma started before the age of 10 years and a higher proportion had rhinitis and infantile eczema than in skin test negative asthmatics.

The late onset of asthma, relatively less frequent personal and family history of allergic disorders in the Kandy asthmatics fits in with the clinical pattern of temperate zone intrinsic asthma as intrinsic asthma tends to be more severe than the extrinsic variety. This pattern may be due to the fact that patients with more severe asthma come to this hospital.

A significantly higher proportion (65.6%) of asthmatics showed cutaneous hypersensitivity to house dust related allergens when compared to controls (20.8%). In Zaria, (Warrell *et al.*, 1975) cutaneous hypersensitivity to house-dust-related allergens was observed in 58% of asthmatics and 8% of controls. There was no difference in the type of housing and mattress used by asthmatics and controls in our study which could have accounted for this difference in

TABLE 3. Comparison of bronchial asthma in Kandy, in other tropical countries and in the United Kingdom

Clinical features	Kandy (%)	Tropical countries (%)	United Kingdom (%)
Onset before 20 years	28.1	31.1, Zaria (Warrell <i>et al.</i> , 1975) 15.5, New Guinea (Anderson, 1974)	53.4 (Williams and Williams, 1949) 62.9 (Pepys, 1973)
Associated eczema	4.7	Nil, Zaria (Warrell <i>et al.</i> , 1975) 5.6, Barbados 5, Libya (Cua-Lim, 1970)	22 (Williams and Williams, 1949) 26 (Hendrick <i>et al.</i> , 1975)
Associated rhinitis	29.7	27, Zaria (Warrell <i>et al.</i> , 1975) 25, Singapore (Warrell <i>et al.</i> , 1975)	67 (Hendrick <i>et al.</i> , 1975) 74 (Pepys, 1973)
Family history of allergy	39.9	25, Zaria (Warrell <i>et al.</i> , 1975) 11, New Guinea (Williams and Williams, 1949)	50 (Williams and Williams, 1949)
Cutaneous hypersensitivity to one or more allergens			
Asthmatics	75	87, Zaria (Warrell, <i>et al.</i> , 1975) 100, Ibadan 100, New Guinea (Anderson, 1974)	78 (Pepys, 1973) 84 (Hendrick <i>et al.</i> , 1975)
Non-asthmatic controls	54.7	51, Zaria (Warrell <i>et al.</i> , 1975) 19.1, New Guinea (Anderson, 1974)	17 (Tanner-Warwick, 1971)
Skin prick test negative to all allergens used	25	13, Zaria (Warrell <i>et al.</i> , 1975)	16 (Hendrick <i>et al.</i> , 1975) 22 (Pepys, 1973)

reactivity. Sixteen of our asthmatics failed to react to any of the 10 allergens used and in these the pattern of illness did not significantly differ from the rest of the skin test positive asthmatics (Table 2). It is possible that if a wider range of more appropriate allergens had been used, more patients would have been skin test positive.

The combination of positive history with a positive skin prick test has been found to be a reliable way of identifying the allergens in extrinsic asthma in England (Hendrick *et al.*, 1975). In our group of 64 patients with severe asthma studied, though the clinical pattern of the illness resembles that of intrinsic asthma described in countries in the temperate zone, there is a high percentage of cutaneous hypersensitivity. This we feel could be due to environmental factors. Hence, performing skin prick tests in the tropics may not have the same significance as in the countries from the temperate zone.

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