

IDENTIFICATION OF TRIGGER MECHANISMS IN BRONCHIAL ASTHMA

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INTRODUCTION

BRONCHIAL asthma is regarded as variable airway obstruction which presents clinically as wheezing and dyspnoea. Variability is considered with a 20% change in the index of resistance to air flow. This is unlike chronic obstructive airway disease, emphysema and chronic bronchitis, which is irreversible airways obstruction without variability (Starling, 1978).

The classification of bronchial asthma into extrinsic (allergic) and intrinsic (late onset) types is required to assess prognosis and management. In the assessment of patients with bronchial asthma, the identification of causative factors or trigger mechanisms is of vital importance in their management. The trigger mechanisms are grouped under three categories (Starling, 1978), which are allergic factors, infections and non-specific factors such as exercise and temperature changes. The latter mechanisms once identified could be avoided and treated where ever possible.

The purpose of this study is to identify the various trigger mechanisms of bronchial asthma in Malaysian patients admitted to the Medical Unit, Universiti Kebangsaan, Malaysia.

PATIENTS AND METHODS

All consecutive patients seen in the Medical Unit of Universiti Kebangsaan Malaysia between January 1976 and December 1978, that fulfilled the criteria of The American Thoracic Society

(1962) for bronchial asthma were included in the study. No selection was made regarding age, sex, race or severity of illness. Re-admissions and doubtful diagnoses were excluded from the study. Each patient was seen by the authors on admission or in the clinic. A history of trigger mechanisms was obtained from the patient; this was subsequently confirmed by the relatives when possible. Family history of bronchial asthma and history of allergies in the patient and his relatives were documented. In addition to the clinical examination, x-rays of the chest and nasal sinuses, routine examination of blood, urine and stools were performed.

RESULTS AND DISCUSSION

148 patients, 79 males and 69 females, fulfilled the criteria and formed the subjects of this study. There were 42% Malays, 33% Chinese and 25% Indians. As in Singapore, asthma is less common in the Chinese (Gregg, 1977) than in the other two races. In 38% of cases, the illness started before the age of 10 years and in 89% before the age of 40 (Table I). In Herxheimer's (1975) experiences the age of onset of below 15 and 35 were 54% and 85% respectively. However in Nigeria and India (Gregg, 1977) the incidence of the age upon onset in children is less common. Hence asthma affects many children, interfering with their attendance in school. Inadequate treatment render them physically and emotionally handicapped. Parents are told that their children will grow out of the asthma and hence the danger of undertreatment. If the age of onset is under five, in 40% - 50% of patients the asthma disappeared by the age of 15 (Jones, 1976).

Family history of asthma was obtained in half of the patients which is the experience of Herxheimer (1975), while in Mornig's (1973) series, it occurred in one third. Other diseases which mimic bronchial asthma have to be excluded. The likelihood of developing asthma is higher in relatives of asthmatics than in control (Jones, 1976). In 56% of the patients, allergies

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occurred below the age of 30 (Table II) and the allergies were often multiple. Therefore allergies occurred in the younger age group, sensitive to a wider range of allergens. A history of collateral allergy was obtained in 81% of cases, and rhinitis accounted for 52% of the cases. The experiences of Cua Lim (1974) were 72% for collateral allergy and 60% for rhinitis. However, (Gregg, 1977) rhinitis is less frequently seen among asthmatics in Singapore.

Table I
Age of first attack in 148 cases of Bronchial Asthma

| Age | Number of cases |
|---------|-----------------|
| 0 — 9 | 58 |
| 10 — 9 | 35 |
| 20 — 29 | 20 |
| 30 — 39 | 19 |
| 40 — 49 | 8 |
| 50 — 59 | 4 |
| 60 | 4 |
| Total | 148 |

Table II
History of allergy in 148 asthmatic patients by age group

| Age group | Allergic to one factor | Allergic to more than one factor |
|--------------|------------------------|----------------------------------|
| 0 — 9 | 5 | 0 |
| 10 — 19 | 23 | 19 |
| 20 — 29 | 55 | 25 |
| 30 — 39 | 17 | 12 |
| 40 — 49 | 18 | 14 |
| 50 — 59 | 2 | |
| 60 and above | 0 | |
| Total | 120 | 70 |

Table III shows the incidence of precipitating factors in the authors' series as compared to the other workers. Weather changes appeared significant in our findings. Emergency admissions for asthma in Brisbane and Hong Kong (Gregg,

Table III
Incidence of precipitating factors of author's series compared to others

| Precipitating Factors | Turner-Warwick % | Cua Lim [1974] % | Jones [1976] | Godfrey [1977] % | Author's series [1978] % |
|-----------------------|------------------|------------------|--------------|------------------|--------------------------|
| Weather | — | — | 59 | — | 42 |
| Emotion | 45 | 35.1 | 60 | — | 20 |
| Exercise | 50 | — | 97 | — | 40.5 |
| Infection | 43 | — | 56 | 40 | 50 |
| Rhinitis | — | — | — | 60 | 52 |
| Allergens | — | — | 73 | — | 81 |

1977) are related to temperature and humidity. Emotions was less important in our patients if compared to that of other authors (35 - 60%, Table III). Allergy and infections trigger the attack which then persist possible because of anxiety. However, Luparello (1968) induced attacks of asthma in 50% of patients by injecting normal saline which the patients imagined was an allergen. Exercise caused attacks in 40% of our patients who were mainly adults. In Godfrey's (1977) experience it was 97% and his patients were mainly children. This is explained on the basis (Godfrey, 1977) that adults did not exercise adequately to bring on an attack. Infections were responsible for 40 - 50% of the attacks in the same series (Table III). Severity of asthma and mortality from status asthmaticus were highest in those with an infective factor (Gregg, 1977). In certain patients (Howell, 1971) the first attack of asthma followed an acute bronchial infection. Allergic rhinitis occurred in the majority of patients as in Brompton Hospital (Gregg, 1977) and Manila experience (Cua Lim, 1974). However it is less common in Nigeria and Singapore (Gregg, 1977). If the allergens are identified they can be treated early. The important allergens constituted household dust (52%) pollen (38%) and food (25%). Household dust can be reduced by vacuuming and frequent change of linen. Pollen desensitisation is effective in some patients. Avoidance of allergenic foods such as eggs, shrimps and crabs will be yet another important step towards the control of the disease. History

of allergies guide the skin sensitivity tests to be performed, thus identifying the allergens. The use of disodium cromoglycate will be advantageous in those in whom desensitisation is difficult or in cases where allergens are unavoidable.

SUMMARY

The study was proposed to identify trigger mechanisms in bronchial asthma in Malaysian patients. All consecutive patients, seen in the Medical Unit, Universiti Kebangsaan Malaysia between 1976 and 1978, satisfying the American Thoracic Society criteria for bronchial asthma formed the subjects of the study. Analysis of 148 patients, 79 males and 69 females, consisting of 42% Malays, 33% Chinese and 25% Indians lead to the following tentative conclusions. While familial incidence was clearly noted, history of allergy was equally evident. Exercise, infections including rhinitis as precipitating factors were also observed in a significant number of patients. The influences of climatic variations and emotional disturbances constituted important predisposing factors in the study. In the light of our findings and their role in the

management of patients we hopefully believed to achieve better results.

ACKNOWLEDGEMENT

I am grateful to Professor Kannan Kutty for a critical review of the manuscript, Puan Baridah for the secretarial help and the medical library staff for the references.

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