

INDIVIDUAL STUDY

Lung disease in a general practice with special reference to asthma, chronic bronchitis and eosinophilia

B. T. B. MANNERS, M.R.C.P., M.R.C.G.P., M.R.C.Path.
General Practitioner, Addlestone, Surrey

BECAUSE of the relative specificity of drugs such as disodium cromoglycate (DSCG) and steroids (either as tablets or aerosol-beclomethasone dipropionate) for the treatment of asthma, it is important to differentiate asthma from either recurrent acute bronchitis or chronic obstructive bronchitis.

The recognition of asthma depends on the presence of intermittent reversible lower airways obstruction and partly on the presence of 'markers' of allergy. Allergy is the most common factor in the cause of asthma, although infective and psychological factors are also often present.

Patients with hay fever (seasonal allergic rhinitis due to grass pollen) often have a past or present history of other disorders such as asthma, chronic perennial rhinitis, flexural eczema, urticaria or angioneurotic oedema. There is usually eosinophilia of blood and nasal mucus, skin prick tests to grass pollen are positive (Manners and Ezeoke, 1973). Similar markers of allergic disorder have been described in asthmatics, although sputum eosinophilia is described instead of nasal mucus eosinophilia. Some asthmatics have negative skin tests to inhalant allergens.

A retrospective study of patients with lung disease in a single general practice is described to determine the prevalence of asthma and its possible relationship to chronic obstructive bronchitis. The latter is defined as sputum production most days of the week for at least three months of three consecutive years and is associated with dyspnoea due to essentially irreversible airways obstruction. Simple chronic bronchitis means sputum without dyspnoea. Asthma and chronic obstructive bronchitis are not necessarily mutually exclusive diagnoses and the former may lead to latter.

Method

The practice is in semi-rural Surrey and comprises people chiefly from social classes II and III; the age structure is biased towards children and young adults (Grob *et al.*, 1970).

The notes of the 5,600 patients on the practice list in January 1973 were examined retrospectively for information about lung disease. Since 1969 the notes of patients with significant lung disease have been marked by a yellow card, enabling their easy identification. In particular, details were sought relating to allergic disorders, infections of the respiratory tract, and eosinophilia of blood, sputum or nasal mucus.

Nasal mucus was collected on a cotton-wool swab and immediately spread on a glass slide and fixative added; a chromotrope stain was used to demonstrate the eosinophils. Peak expiratory flow rates had often been recorded but these were random estimations and were not standardised according to immediately preceding treatment.

Results

The colour coding system indicated lung disorder in 214 patients (table 1), some of whom have had more than one disease. Asthma was the dominant feature in 104 patients

(prevalence of 18 per 1,000) and chronic obstructive bronchitis in 57 (prevalence of ten per 1,000).

TABLE 1
NATURE OF PULMONARY DISORDER IN 214* PATIENTS

Asthma		104
Chronic obstructive bronchitis preceded by asthma	19	57
Recurrent purulent infection of upper and lower tract Bronchiectasis	10	31
Pulmonary tuberculosis		26
Lobar pneumonia		22
Cor pulmonale		12
Miscellaneous (Pulmonary fibrosis 7—Pneumothorax 5, Carcinoma of lung 1).		

*Some patients had more than one disorder.

A past or present history of both hay fever and chronic perennial rhinitis was noted in 32 per cent of the asthmatics, hay fever alone in 26 per cent and chronic perennial rhinitis alone in 14 per cent. A history of recurrent wheezy bronchitis allegedly due to repeated infection in childhood was recorded in 41 per cent of asthmatics; hence in retrospect they may be regarded of having had undiagnosed childhood asthma. At least one positive skin prick test to an inhaled allergen was found in 42 out of 45 asthmatic patients in whom skin tests had been performed. Eosinophilia of either blood, sputum or nasal mucus was found in 39 of 44 asthmatics so examined.

Asthma had preceded the development of chronic bronchitis in 19 out of the 57 chronic bronchitic patients; 15 of these 19 were males, and eosinophilia of either blood, sputum or nasal mucus was found in 15 out of 16 so examined. More than ten cigarettes had been smoked daily for many years in ten patients of this transitional group.

The histogram (figure 1) shows the age and sex distribution of patients with asthma (104 patients), chronic obstructive bronchitis (38 patients), and the transitional group (19 patients) of chronic bronchitis preceded by asthma. Asthma is largely a disorder of young people in this practice, and chronic bronchitis of middle aged or elderly males. Male asthmatics probably develop the disease of chronic obstructive bronchitis in later life.

There was a positive correlation between a previous history of sinusitis, recurrent acute bronchitis, pneumonia, and bronchiectasis. In later life 18 per cent of these patients developed chronic obstructive bronchitis, and a smaller proportion developed pulmonary fibrosis or cor pulmonale. Lobar pneumonia, which was recorded on 22 occasions and often followed by pleural effusion, was associated with chronic bronchitis in eight patients, in postoperative patients after discharge home on three occasions, with pre-existing infective disorders of the lower or upper tracts in four cases, with asthma twice, and in five otherwise healthy adults.

Cor pulmonale occurred in 12 patients, ten of whom had chronic obstructive bronchitis—three of these had previously suffered severe asthma. Pulmonary fibrosis occurred in seven patients, being variously associated with tuberculosis, bronchiectasis, recurrent pneumonia or asthma.

Nasal polyps had been removed from seven patients; four had allergic rhinitis and asthma, and three had recurrent sinusitis, lung infections, and were heavy smokers. Laryngeal papillomas occurred in four male chronic bronchitic.

Active pulmonary tuberculosis had occurred in 26 patients over the period 1940 to 1972, the last new case presenting in 1969. There was only one patient with carcinoma of the lung, and none with pneumoconiosis.

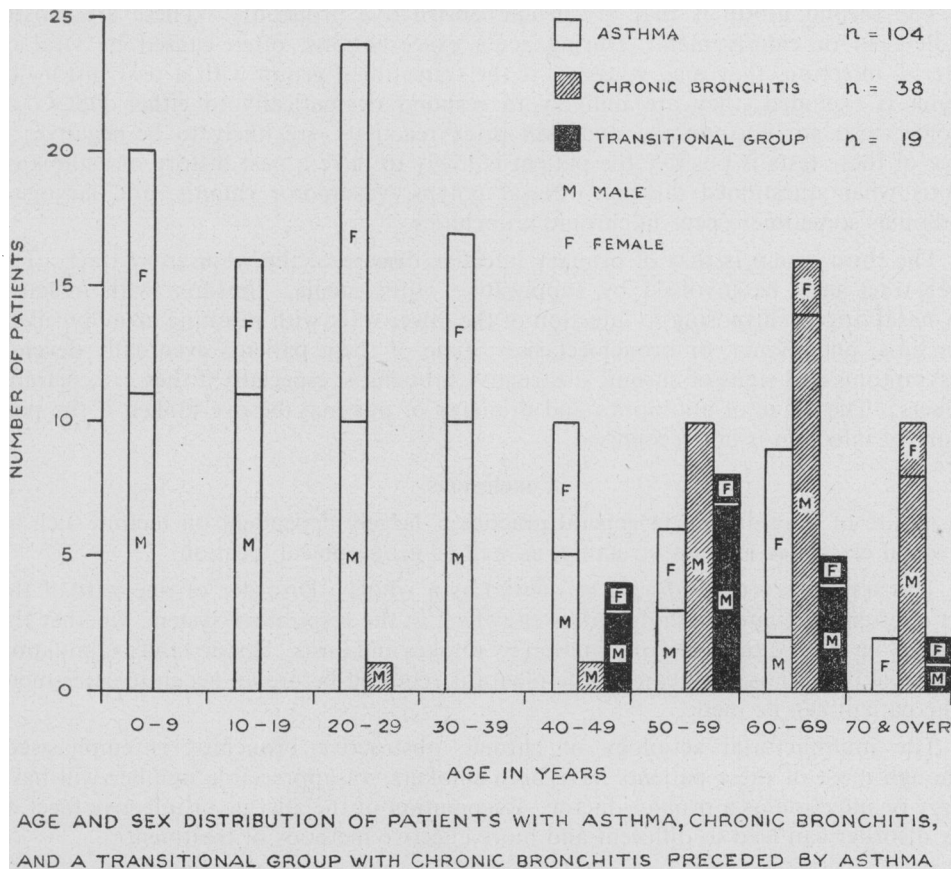


Figure 1

Discussion

There are three main groups of pulmonary disease in this practice. The first and most frequent is asthma, which is most easily recognised in young adult life. Many of these patients have either hay fever or chronic perennial rhinitis, and have had "recurrent acute wheezy bronchitis" in childhood. Operations for tonsillo-adenoidectomy, submucous resection of the nasal septum, removal of nasal polyp, and submucous diathermy are often recorded. In later life some asthmatics develop excess sputum production and persistent dyspnoea; if examined at this time, they may be misdiagnosed as chronic obstructive bronchitis, and hence may not be given a trial of disodium cromoglycate or steroids.

Finding excess eosinophils in blood, sputum or nasal mucus, and the presence of positive skin prick tests to inhaled allergens, are especially helpful in detecting these 'masked' or transitional asthmatics. Women, who in the past have been lighter smokers than men, tend to preserve the classical features of asthma into old age, and hence are more readily diagnosed as asthmatic than old men; this is observed even when the onset of asthma is in middle age.

The response of asthmatics to either DSCG or steroids can be dramatic and should be confirmed by serial observations of peak flow rate. However, measurements of FEV and FVC before and after the use of bronchodilators would be more accurate and it is hoped that this investigation will be performed in a prospective study.

The second group is that of chronic obstructive bronchitis. These are mostly middle-aged or elderly men. During acute exacerbations, often caused by viral or bacterial infection, they may wheeze. If the transitional group with a past history of asthma is excluded, they are unlikely to respond dramatically to either DSCG or steroids; tests for eosinophilia and skin prick reactivity are likely to be negative; if either of these tests is positive the patient is likely to have a past history of asthma or rhinitis when questioned directly. Nasal polyps, vasomotor rhinitis, and laryngeal papillomas sometimes occur in chronic bronchitics.

The third group is that of primary infective disease of the respiratory tract. The upper tract may be involved by suppurative otitis media, sinusitis, with infective post-nasal drip predisposing to infection of the lower tract with resulting acute purulent bronchitis, pneumonia, or bronchiectasis. Some of these patients eventually develop the symptoms and signs of chronic obstructive bronchitis, especially if they are cigarette smokers. The value of antibiotics and drainage of pus may be overlooked if the past history of infection is not recognised.

Conclusions

The nature of lung disease in general practice is largely dependent on factors such as the social class, age and sex structure, as well as geographical location.

The respiratory tract should be viewed as a whole. Disorder of one part of the tract is often associated with disorders elsewhere in the respiratory system, whether the aetiology be allergy, infection or irritation by smokes and dusts. History and examination of the tract from nose and ears to the pleura is required before an accurate assessment of the patient can be made.

The multifactorial aetiology of chronic obstructive bronchitis is emphasised. Although most of these patients have been smokers, an appreciable number will have allergy or infection as a primary factor. Recognition of the allergic or infective facet of their disorder can lead to different and more effective methods of treatment.

It is important to seek eosinophils as an indicator of allergic disorder. The examination of nasal mucus for eosinophils is valuable because of the frequent coexistence of allergic rhinitis with asthma. The presence of acute infection reduces the likelihood of finding eosinophils, since neutrophils then become the dominant inflammatory cell: neutrophils may indicate not only infection but possibly (speculatively) also the Arthus or Type III pattern of immune response to inhaled allergens. Fresh sputum is difficult to obtain in young asthmatics, especially in children.

Summary

A retrospective study of pulmonary disease in a practice of 5,600 patients is described. Because of a bias in the age structure towards children and young adults, asthma was the dominant disorder, occurring in 104 of 214 patients with lung disease. Chronic obstructive bronchitis occurred in 57 patients and included a transitional group of 19 patients who had a history of asthma. The finding of eosinophilia in blood, sputum or nasal mucus was a useful indicator of an allergic diathesis.

REFERENCES

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