The Place of Beclomethasone Dipropionate Aerosol in the Treatment of Asthma

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The cardinal abnormality in asthma is reversible airways obstruction, caused by two pathological processes which may be present singly or in combination. These are bronchial muscle constriction, which is usually reversible by sympathomimetic bronchodilators, and an inflammatory reaction, consisting of oedema and exudation of the bronchial mucous membrane, which responds poorly to bronchodilators but is reversible by corticosteroids. The severity of asthma is largely determined by the magnitude of this inflammatory component of airways obstruction.

Unquestionably, systemic corticosteroids are the most effective form of treatment in severe asthma, but their use has been restricted due to their reputation for causing side-effects. Although the incidence of dangerous side-effects is far less common than is generally supposed [1,2], even the least serious side-effect of facial disfigurement is distressing to patients. The fear of inducing side-effects has made some clinicians very reluctant to use systemic corticosteroids for asthma unless it is life-threatening, and consequently many patients with moderately severe asthma have been deprived of the only form of treatment which could have been effective in relieving their airways obstruction. Furthermore, the wish to avoid the occurrence of side-effects often leads to patients who are on long-term corticosteroid therapy taking a sub-optimal dose and being unduly hesitant over increasing it when they have acute exacerbations.

For over 20 years attempts have been made to treat asthma by inhalation of a corticosteroid, either as a powder [3] or as an aerosol [4], it being hoped that the corticosteroid would suppress asthma by its topical action without causing systemic side-effects. For a variety of reasons none of these attempts was successful until the preparation of beclomethasone dipropionate aerosol.

By now, sufficient experience with beclomethasone dipropionate aerosol in clinical practice has accumulated to justify an attempt to define its place in the treatment of asthma. In order to do so, it is first necessary to examine the
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principal disadvantage of this new form of treatment, which in some reports has not received as much attention as it deserves.

Paradoxically, the very quality which has made beclomethasone dipropionate aerosol such a valuable addition to the therapy of asthma — that is, its topical action — also gives rise to its principal limitation, for in order to reach its site of action the aerosol has to be inhaled. Although there is little evidence on this point, it seems probable that the depth of inhalation is a factor of great importance, the aerosol's efficacy being dependent upon its reaching the smaller distal airways.

Because it is difficult, if not impossible, to inhale an aerosol effectively in the presence of severe airways obstruction, corticosteroid aerosols have no place in the treatment of acute attacks of asthma. It should be borne in mind that if a patient, taking beclomethasone dipropionate aerosol as his sole form of maintenance corticosteroid therapy, should have an acute lower respiratory infection or an exacerbation of asthma, he may be deprived of the aerosol's protection. The author has personal knowledge of one patient in whom a severe episode of status asthmaticus occurred under these circumstances [5], and has heard of several other instances. It is essential, therefore, that all patients taking beclomethasone dipropionate aerosol on a long-term basis are given a reserve supply of prednisone tablets and that they should understand the necessity for taking these in high dosage for a few days on their own initiative whenever they have bronchitis or a relapse of asthma.

In the short space of time since it was first introduced into clinical practice, beclomethasone dipropionate aerosol has been the subject of numerous trials which have been extensively reviewed on page 166 of this issue. Its use has been studied in two categories of asthmatic patients — firstly, those who had never previously taken systemic corticosteroids as maintenance therapy, and secondly, those who were already taking long-term continuous corticosteroid therapy and were dependent on it for the control of their asthma.

Several authors [6,7,8,9,10] have reported that they successfully used beclomethasone dipropionate aerosol as the sole form of corticosteroid therapy in patients with persistent asthma which had not responded to an adequate trial of bronchodilators or sodium cromoglycate. However, many clinicians take the view that it is preferable to treat such patients initially with a short course of an oral corticosteroid in order to achieve maximum reversal of airways obstruction. Not only does this facilitate introduction of the corticosteroid aerosol, but knowledge of the patient's optimum ventilatory function (as indicated by serial measurements of FEV₁ or PEF) is of great value as a reference point against which further progress can be assessed. Once the patient is able to inhale the corticosteroid aerosol effectively, the dosage of the short course of oral corticosteroid can be reduced rapidly. In most cases it should be possible to withdraw the oral corticosteroid without recurrence of asthma.