demonstrated that sequential doses of metaproterenol at ten and 20-minute intervals produced greater bronchodilation than single doses.

Candidiasis is a potential problem with inhaled corticosteroids. Slight hyperextension of the neck during inhalation may lessen the amount of steroid impacting in the mouth, and rinsing the mouth will decrease the amount of steroid remaining in the mouth after a dose.

The technique recommended by Newman and Clarke therefore should be expanded to include:

1. Assemble the device, remove the cap, and shake the inhaler thoroughly.
2. Breathe out slowly and fully to the end of a quiet breath.
3. Hold the MDI in the upright, inverted position (ie nozzle end down).
4. Place the mouthpiece between the lips or hold three to four cm from the mouth.
5. Hold the head upright and activate the MDI at the start of a slow and deep inspiration.
6. Hold the breath for ten seconds or, if less, as long as possible.
7. Exhale slowly.
8. Wait between doses (interval depends on the drug being administered).
9. Clean the plastic holder thoroughly and frequently.

If the patient is using an inhaled corticosteroid, the above steps should be modified to include:

a. Slightly hyperextend the neck during inhalation.
b. Rinse mouth/gargle with water after dose.
c. Use an inhaled sympathomimetic 10 to 15 minutes before the dose if the corticosteroid irritates the airways.

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To the Editor:

We strongly support Newman and Clarke's attempt (Chest 1984; 86:342-44) to improve and standardize metered dose inhaler (MDI) use. Only by teaching patients an optimum technique will maximum delivery of drug to the lung be achieved and most effective therapeutic results be obtained. In our opinion, aerosols should be inhaled from an MDI with the actuator mouthpiece held 4 cm in front of the open mouth. This method provides twice as much drug to the lower respiratory tract than when the MDI is placed between the closed lips. Furthermore, carefully controlled clinical trials have not shown the open mouth technique to be less effective and several have shown better bronchodilation when aerosol is delivered into the widely open mouth. With careful instruction (required in any case to utilize MDIs effectively), our patients have no difficulty with this method.

The one minute pause between MDI actuations, as recommended by the authors, is an arbitrary period and can be shortened considerably, particularly if patients are using steroid aerosols twice daily and must take large numbers of puffs on each occasion. Five to ten seconds should be quite sufficient to allow pressure equilibration in the canister and effective MDI dose.

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To the Editor:

In the September issue of Chest, an editorial was devoted to the proper use of metered dose inhalers (MDIs) (Chest 1984; 86:342-44). Newman and Clarke analyzed different practical aspects of therapeutic interest and, finally, recommended a technique. We have previously reported the main clinical features of several asthma outbreaks in Barcelona. Although no mention was made on the proper use of MDIs, our studies gave us the opportunity to investigate the use of MDIs in a population of 88 patients attending the emergency room for treatment of acute severe asthma; moreover, the use of MDIs was checked following the same principles as those suggested by Newman and Clarke. Thus, we believe that our results can perfectly complement those presented in that editorial.

Fifty four of the included patients (61%) used MDIs improperly. The most frequently observed error consisted in failure to hold the breath for 10 seconds (50%), practically the same proportion of subjects (54%) exhibited a marked inability to coordinate actuation of aerosol with inhalation, the so-called hand-lung problem. Other mistakes consisted in not breathing out fully (45%), and not shaking the inhaler thoroughly (33%). All patients removed the cap.
Only 30% of them failed only in one step while the rest made more than one error simultaneously. We also studied the kind of outpatient control, if any, devoted to these patients. As expected, the greatest percentage of errors was observed in the group of patients without any kind of medical advice (83%). However, practically the same proportion (79%) failed to use the MDIs properly despite the fact that they were under the supervision of medical outpatient care, either public or private. This proportion fell to 45% in our group of asthmatic subjects controlled by a member of our hospital staff.

Our results do show both that MDIs are extensively used in a wrong fashion and also that the majority of patients failed in more than one of the recommended steps, reflecting the importance of the hand-lung problem.

As suggested by Newman and Clarke, proper instruction is essential to teach the correct inhaler technique. However, since both reported series on the bronchodilator effect of the patient’s own technique and that from supervised administration by the physician have been controversial, we suggest that a trial and error method may be the best way to achieve maximal bronchodilator response. In other words, if the asthmatic patient does feel the airway penetration of the nebulized particles, regardless of method, maximal therapeutic effect may probably be achieved, which essentially is the cornerstone of medical advice.

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To the Editor:

We are grateful for the comments made regarding our recent editorial on the proper use of metered dose inhalers (MDIs). Although we are aware of the theoretical advantages of the open mouth technique, we do not recommend it. We estimate that, with the mouthpiece 4 cm from the open mouth, the inhaler needs only to be held 1 cm off-center, or to be turned through an angle of 10 degrees upwards, downwards or to one side in order to spray the drug onto the lips and face. In our experience, the average patient could easily develop this fault. Thus we regard the open-mouth technique as a potential and undesirable source of further error in the use of MDIs. This may explain why one clinical trial has in fact shown less bronchodilatation by open-mouth inhalation compared to either closed-mouth inhalation or the use of a cylindrical spacer. Maximal bronchodilator response is achieved with the closed-mouth technique, provided that patients inhale slowly and then hold the breath for 10 seconds.

After the MDI has been actuated, the metering chamber refills almost instantaneously, and the inhaler will spray again after only one second. However, the temperature of the actuator seating and valve stem falls by 10 to 15°C and does not return fully to ambient temperature for 30 to 40 seconds. The propellant vapor pressure, and hence the spray characteristics, depend upon temperature. A one minute interval between puffs removes any danger of changing the nature of the spray by actuating through a cold nozzle. When more than two puffs are to be taken, a shorter interval is obviously more convenient, and may well be just as effective.

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Selective IgA Deficiency and Sarcoidosis

To the Editor:

We recently described a case of selective IgA deficiency and sarcoidosis associated with recurrent sinopulmonary infections. We assumed that this association was coincidental as it has only been previously described in six patients with sarcoidosis, and the incidence of selective IgA deficiency in the general population is estimated to be one in 500. We suggested, however, some common immunologic mechanisms that may underlie both disorders and explain their possible association. Shortly thereafter, we encountered another similar case and encourage others to report similar cases to establish whether a real association exists.

Case Report

A 31-year-old male smoker was referred to us in February 1984 to undergo mediastinoscopy for bilateral hilar lymphadenopathy, originally seen on chest x-ray examination in 1966. The patient had suffered from recurrent sinopulmonary infections since the age of 3 years and was suspected to have bronchiectasis in the lower lobes of both lungs. Routine laboratory examination results were within normal limits. The tuberculin skin test (STU of PPD) proved nonreactive. Quantitation of serum IgG, IgA and IgM, using radial immunodiffusion technique on commercially available immunoplates, showed complete absence of IgA. Serum levels of IgC and IgM were 2,300 and 75 mg/100 ml, respectively. Ouchterlony analysis of the patient's saliva showed complete absence of both IgA and IgM. Gallium-67 lung scan demonstrated increased uptake of the tracer in both hilar and lower lung regions. Serum angiotensin-I converting enzyme level was 3.45 mmo/l/ml (normal range 2.56 to 0.81 mmo/l/ml serum). The diagnosis of sarcoidosis was established through mediastinoscopy and biopsy of an enlarged hilar lymph node. Follow-up to late 1984 revealed no change in his clinical condition or the serum level of IgA, and no change was evident on the chest x-ray film. No corticosteroid therapy was given.

This patient constitutes the eighth reported case of sarcoidosis and selective IgA deficiency and the second reported case, to our knowledge, to be associated with recurrent sinopulmonary infections. In this patient, however, it may well be that selective IgA deficiency is congenital and sarcoidosis developed later.

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