Errors in the Treatment of Asthma

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Most errors in asthma treatment stem from failure to identify the patient's current problem. Increasing patient involvement, using self-administered peak flow monitoring, starts a process that corrects these errors and also leads to informed, responsible, asthmatics.

There are 2 major settings for errors in asthma treatment: the crisis, and the routine consultation. Recent advances have made many of yesterday's treatments into today's errors in both settings.

1. Errors in Treating Asthma Crises

In practical terms, an asthma crisis can now be defined simply as a seriously decreased responsiveness to sympathomimetic bronchodilators. This situation creates problems when traditional injections are used.

1.1 Use of Adrenaline Injections

In the 'ephedrine era', as endogenous adrenaline and noradrenaline became depleted by that drug, adrenaline 0.5mg given subcutaneously had a dramatic effect. However, in today's situation when a patient's potent \( \beta_2 \) selective drugs have failed, adrenaline can be much less effective and more hazardous.

It is now safer to push the dose of the \( \beta_2 \) selective drugs, e.g. by using nebulised fenoterol or salbutamol respirator solution 5 to 10mg. A Hudson nebuliser powered by oxygen or air should be available, at least in the doctor's office.

1.2 Incorrect Use of Aminophylline

Slow intravenous administration of aminophylline 6mg/kg retains a place in current therapy and is used, where full dosage of the \( \beta_2 \) selective sympathomimetics are ineffective. However, such 'loading doses' are extremely dangerous in the growing group of patients already taking oral theophylline. This is probably the most serious common error in crisis treatment in both hospital and general practice, and has led to convulsions, catastrophic cardiac arrhythmias, vomiting and aspiration.

Although IV loading doses of aminophylline retain a place in those patients not yet on theophylline, oral microfmed theophylline ('Nuelin') 5mg/kg can be used as a 'loading crisis drug' followed by a 'crisis maintenance regimen' of 0.8mg/kg/hour, e.g. 125mg 3-hourly in a patient weighing 70kg.
1.3 Failure to Give a Course of Oral Corticosteroids

This is a most serious omission in a crisis, and inadequate dosage can be equally serious. High dose corticosteroid therapy for short periods is much safer than continuing crisis asthma, which can involve the following problems:

1. **Crisis 'morning dipping'**. The fact that nocturnal and early morning attacks tend to recur night after night can be forgotten. Although corticosteroids have no immediate effect, they can minimise the danger of the next 'morning dips'.

2. **Breakthrough asthma**. This can be dangerous in patients taking inhaled corticosteroids, who succumb to viral respiratory infections or other overwhelming challenges, and, in addition, have their inhaled corticosteroid delivery blocked off.

3. **Sympathomimetic unresponsiveness**. This problem is now seen to be the central issue. Poor responsiveness to the usual sympathomimetics is likely to persist for some time after a crisis, even if temporarily overcome by high dose bronchodilators in the surgery or emergency room. Rapid improvement is commonly dependent on short, but high dose corticosteroid courses.

1.4 Failure to Refer for Hospital Treatment

In the past, hospital staff have been known to complain about unnecessary asthma admissions, and 'status asthmaticus' was seen as the only proper indication. However, deaths from asthma have been increasingly documented and this is totally unacceptable. Patients should be admitted if the response to full bronchodilator therapy is not dramatic, or if there is a danger of continuing severe nocturnal attacks.

1.5 Avoiding Errors in Crisis Treatment

In summary therefore, to avoid errors in crisis treatment, the clinician should:

1. Help patients to recognise unresponsiveness to their normal sympathomimetic drug dosage as a crisis, preferably from their own peak flow recordings.

2. Use a respirator solution such as fenoterol or salbutamol in doses of 5 to 10mg via a pump or oxygen powered nebuliser, rather than adrenaline injections, to achieve initial control.

3. Encourage patients to take adequate theophylline orally at the commencement of a crisis, and **never** use intravenous aminophylline loading doses after patients have taken oral theophylline.

4. Prescribe in advance, an adequate oral corticosteroid course to be started by the patient when a crisis occurs; e.g. prednisone 5mg tablets: 8 for 2 days, 6 for 2 days, 4 for 2 days, then 2 for 2 days.

5. Monitor the response to treatment carefully, discussing it with the patient and preferably using the patient's own peak flow chart.

6. Admit the patient to hospital if the response to treatment is not dramatic and maintained.

2. Errors Arising During the Routine Consultation

Objective lung function testing often reveals that the key problem in many asthmatics is underuse of critically important asthma therapy, which is often masked by consequent overuse of other drugs.

2.1 Underuse of Vital Therapy

Problems that can give rise to underuse of vital therapy include the following:

2.1.1 Failure to Perceive Asthma

Some patients are not aware of physiologically documented attacks of severe airways obstruction and most patients are unaware of the moderate air flow obstruction present between attacks. Many such patients, if they take drugs only when symptomatic, will present with crises.