

An audit of compliance of inhaled steroid medication in Maltese asthmatic children. A comparison between 2008 and 2014

Cecil Vella, Gianluca Bezzina, Matthew Urpani

Introduction

In the treatment of bronchial asthma, inhaled therapy with bronchodilators and corticosteroids represents the basis for acute and long-term management. Drug therapy in asthma is predominantly by pressurized metered dose inhalers. The impact of treatment on the disease morbidity and mortality depends to a large extent on appropriate delivery of drugs to the lungs by means of a spacer device and on the continuity of treatment. Poor compliance with medication is a well known problem in conditions which require long-term treatment. This is especially so in asthma where initial improvement may be followed by longer remission and a tendency to stop treatment. Compliance is "the extent to which a person's behaviour (in terms of taking medications, following diets, or executing lifestyle changes) coincides with medical or health advice." ¹. Compliance with preventive therapy such as inhaled corticosteroids (ICS), the effects of which are seen over a period of weeks, may be less than compliance with drugs that relieve asthma symptoms more rapidly such as bronchodilators. To our knowledge there are no previous studies which have assessed the prevalence of non-compliance with inhaled corticosteroids in Maltese children.

Key words

Inhaled corticosteroids, asthmatic children, compliance.

Aims

The aim of this audit was to assess and quantify the prevalence of poor compliance with prescribed inhaled corticosteroid medication in Maltese asthmatic children. Also the practice and prevalence of stopping therapy in the summer months will also be assessed. Finally the use of a spacer device will be documented and compared with the high usage as previously assessed in an earlier study ².

Methods

One hundred and thirty one children between seven and fifteen years of age attending a children's outpatient clinic between December 2013 and March 2014 were assessed. The audit was questionnaire-based (figure 1). Questions asked form part of the routine assessment and management of asthmatic children attending for regular visits and for this reason, ethics committee approval was not required. Patients recruited attended outpatients for routine follow-up and were under the care of a single consultant. Results were compared to an identical audit that was carried out in one hundred and twenty four children attending the same clinic during 2008.

Results

Questionnaires were completed for 131 children with a diagnosis of chronic bronchial asthma attending the paediatric outpatient department between December 2013 and March 2014. Results were compared to those from an identical audit carried out on 124 children in 2008. 162 were male (63%) and 93 were female (37%). 124 were between the ages of 7 and 10 years (49%) and 131 were between 11 and 15 years of age (51%).

Use of spacing device for delivery

The use of a spacer device in the administration of inhaled corticosteroids was recorded as 98% in 2008 and 99% in 2014.

Cecil Vella MD, MRCP(UK), FRCPC *

Consultant Paediatrician,
Mater Dei Hospital,
Msida, Malta
cecil.vella@gov.mt

Gianluca Bezzina M.D.

Foundation Programme Year II,
Mater Dei Hospital,
Msida, Malta

Matthew Urpani M.D.

Foundation Programme Year II,
Mater Dei Hospital,
Msida, Malta

*Corresponding author

Figure 1: Sample of questionnaire

Age bracket	
7-10	<input type="radio"/>
11-14	<input type="radio"/>
Sex	
Male	<input type="radio"/>
Female	<input type="radio"/>
Do you make use of a spacer device whilst consuming your MDI?	
Always	<input type="radio"/>
Most times	<input type="radio"/>
Sometimes	<input type="radio"/>
Never	<input type="radio"/>
Not applicable (for dry powder inhalers only)	<input type="radio"/>
If not always making use of spacer device – Why?	
Believe to have enough co-ordination to do without device	<input type="radio"/>
Too unsightly or bulky to use and carry around	<input type="radio"/>
Believe it makes no difference	<input type="radio"/>
Indifferent	<input type="radio"/>
Are you regularly consuming your prophylactic inhalers as prescribed?	
Always	<input type="radio"/>
Most times	<input type="radio"/>
Sometimes	<input type="radio"/>
Never	<input type="radio"/>

Figure 1: Sample of questionnaire (cont.)

<p>If not always complying with treatment regimen – Why?</p> <p>Do not feel it is necessary</p> <p>Fear of side effects</p> <p>Indifferent</p> <p>Parental impression: Do you think that your child takes his preventative treatment regularly?</p> <p>Always</p> <p>Most times</p> <p>Sometimes</p> <p>Never</p> <p>Do you stop you prophylactic inhalers during the summer months?</p> <p>Yes</p> <p>No</p> <p>If you do not stop your inhaler treatment, do you reduce the dose?</p> <p>Yes</p> <p>No</p> <p>If you do stop your inhaler treatment – Why?</p> <p>Advised by doctor</p>
--

Compliance with prophylaxis

When asked about the regular use of prophylactic ICS, 90% claimed they always took their treatment. This was comparable to a compliance rate of 92% recorded in 2008.

Those patients who were non-compliant with regular use of ICS cited that they did not feel treatment was necessary in 36% in 2008 and 24% in 2014. The rest of the patients that were non-compliant were indifferent.

The parental impression of the regularity of treatment in their children compared well to the claims of the children themselves.

Stopping prophylaxis in summer

When asked if ICS were stopped during the summer months, 23% said that they stop their

prophylaxis in 2008. An improvement was noted in 2014 when the rate of patients who stopped treatment decreased to 18%. The commonest reason cited for stopping ICS in summer was that patients felt better and saw no benefit to continue. A significant percentage of children either stopped their treatment in summer following medical advice (28% in 2008, 21% in 2014) or reduced the dose of ICS (18% in 2008, 7% in 2014).

Relation of compliance with age of patient

Compliance in patients in the 11 -15 year old bracket was almost identical to compliance in younger children.

Discussion

Compliance, or adherence, as it relates to health care is the extent to which a person's behaviour coincides with medical or health advice. Medication compliance is

critical for all aspects of paediatrics, specifically in successful treatment, disease prevention, and health promotion.^{3,4,5} Compliance depends on the patient's and physician's committing to the same objectives. It is unfortunate that numerous studies and physician accounts reveal difficulties in achieving compliance with paediatric medication therapy. Medication compliance in paediatric patients ranges from 11% to 93%.⁵ Poor compliance places children at risk for problems such as continued disease, complicates the physician-patient relationship, and prevents accurate assessment of the quality of care provided.

This audit demonstrates that multiple factors may come between a prescription for an inhaled corticosteroid and the arrival of that medicine to its target organ, the lung. These factors have to be considered when assessing response to treatment. Frequently physicians fail to assess the impact that poor compliance has on disease control and will resort to the use of stronger and frequently more expensive medications with an aim of improving control. The patient or his carer, in the case of young children, should be directly questioned regarding compliance before major changes to therapy are made.

Patients fail to comply with asthma medication for a variety of reasons^{6,7}. These range from physical inability to use an inhaler, through simple forgetfulness, to a conscious decision not to use medication as prescribed due to internal or cultural health beliefs or socioeconomic factors. In some patients, poor self-care because of deep-rooted psychological factors (i.e. factors of which patients have only limited awareness) can affect compliance^{8,9,10}. Poor doctor-patient communication can be the cause in many other individuals. Patient indifference to administration of ICS was and still is a significant factor in non-compliance. The high percentage of use of spacer devices as well as the significant drop in the percentage of patients who decrease the dose of their treatment during the summer months is encouraging. The comparable high compliance rate in the older age group was surprising and reassuring. This may be a result of a non-patronising attitude with older asthmatic children and ongoing education of our asthmatics from an early age. We believe that the relatively good compliance rates observed locally are the result of close follow-up of asthmatic children on a regular basis and the repeated assessment of the technique of medication administration. Although the number of patients was relatively small, the similar results from both audits carried out several years apart represent a true picture of the local situation.

Conclusion

There is no single solution that will improve compliance in all patients. Simplifying the regimen or

providing memory aids will be sufficient for some patients, while education will be more appropriate for others. Doctors can also use a range of communication skills to improve the way in which they present information, motivate patients and reinforce progress. These approaches, together with respect for patients' health beliefs and involving them in treatment decisions, can help foster an atmosphere of mutual responsibility and concordance over compliance with the treatment prescribed.

References

1. Haynes, RB Taylor, DW Sackett, DL eds. *Compliance in health care*. 1979 Johns Hopkins University Press Baltimore.
2. Vella C., Grech V. Assessment of use of spacer devices for inhaled drug delivery to asthmatic children. *Paediatr Allergy Immunol* 2005;16; 258-261.
3. Warner JO, Naspitz CK. Third International Pediatric Consensus Statement on the Management of Childhood Asthma. *Pediatr Pulmonol* 1998;25:1-17.
4. Vignola AM, Chanez P, Campbell AM, Souques F, Lebel B, Enander I, Bousquet J. Airway inflammation in mild intermittent and in persistent asthma. *Am J Respir Crit Care Med* 1998;157:403-409.
5. Milgrom H, Bender B, Ackerson L, Bowry P, Smith B, Rand C. Noncompliance and treatment failure in children with asthma. *J Allergy Clin Immunol* 1996;98:1051-1057
6. Jonasson G, Carlsen KH, Sødal A, Jonasson C, Mowinkel P. Patient compliance in a clinical trial with twice daily inhaled budesonide or placebo in children with mild asthma. *Eur Respir J* 1999;14:150-154.
7. Warner JO, Neijens HJ, Landau LI. Asthma: a follow up statement from an international paediatric asthma consensus group. *Arch Dis Child* 1992;67:240-248.
8. Goldsmith CH. The effect of compliance distribution on therapeutic trials. In: Haines RB, Taylor DW, Sackett DL, eds. *Compliance in healthcare*. Baltimore, MD: John Hopkins University Press, 1979;297-308.
9. Rand CS, Wise RA, Nides M, et al. Metered-dose inhaler adherence in a clinical trial. *Am Rev Respir Dis* 1992;146:1559-1564.
10. Coutts JAP, Gibson NA, Paton JY. Measuring compliance with inhaled medication in asthma. *Arch Dis Child* 1991;67:332-333.