

## Impact of Corticosteroid Therapy on Lifestyles in Asthmatic Children from Sri Lanka

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This study was conducted to ascertain the impact of inhaled corticosteroids therapy (ICS) in alleviation of lifestyle restrictions in 200 asthmatic children. 90 children on ICS were reviewed at 3 months. Restrictions on bathing, food, play activities and school attendance were found in >70%. These were not related to asthma severity. Following ICS, reduction in symptoms, hospital admissions, outpatient visits and nebulizations were noted between 67%-73%. Restrictions on bathing, food, play activities and school attendance had been waived off in 23%-55%. We conclude that ICS significantly alleviated symptoms and lifestyle restrictions. However, the reduction on lifestyle restrictions was less than symptom control.

**Key words:** Childhood asthma, Lifestyle, Management, Outcome, Sri Lanka.

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Asthma is a chronic respiratory illness afflicting millions of children worldwide and is a major contributor towards school absenteeism(1). Although much interest has been directed towards its prevalence(2,3), risk factors(4) and therapeutic modalities(5-7), little has been studied about its impact on lifestyles of Sri Lankan children and their families. In clinical practice, it is an observation that parents impose restrictions on head baths, food and outdoor play activities. Lifestyle restriction in childhood asthma has also been reported from India(8).

Inhaled corticosteroids (ICS) are the mainstay in therapy and prevention of asthma, and result in improvement in respiratory symptoms(9). We conducted this study to ascertain the impact of inhaled corticosteroids therapy in the alleviation of lifestyle restrictions in children with asthma.

### METHODS

The study was conducted from June 2005 to March 2006 and included 200 children with bronchial

asthma admitted consecutively to the unit. Children with lower respiratory tract infections, foreign body inhalation, wheeze associated with gastro-esophageal reflux and tuberculosis, were excluded. The diagnosis of asthma was based on the history of recurrent episodes of cough, wheeze, and breathlessness. The diagnosis and classification of severity were made according to the Sri Lanka Medical Association Asthma Guidelines(10), which is in keeping with the British Asthma Guidelines and The Global Initiative for Asthma Guidelines(9,11).

The mother/guardian of each child recruited was given a self-administered questionnaire to obtain information on the child's asthma symptoms and lifestyle restrictions. The questionnaire was in Sinhala (local dialect) and was pretested on a group of mothers of children with asthma attending the pediatric clinic. Restrictions in the preceding six months with regard to bathing, food (natural and commercial) and outdoor play activities (in children over 2 years) and school absenteeism (in children over 3 years attending preschool/school) were evaluated. Utilization of healthcare services, leave

taken by parents from work due to the child's illness, and economic implications were also evaluated.

Out of the 200 children recruited, 111 required prophylactic therapy and were commenced on beclomethasone dipropionate as per the following dosing schedule: for mild persistent asthma under one year of age 50 µg twice a day, 1 to 5 years of age 100 µg twice a day and over 5 years of age 200 µg twice a day; for moderate and severe persistent asthma under one year of age 100 µg twice a day, 1 to 5 years 200 µg twice a day and over 5 years of age 200-300 µg twice a day. The drug was delivered by a metered dose inhaler with a spacer. The inhaler technique was taught to the children and parents by the researchers. These children were reviewed one week later to assess inhaler technique and compliance. The first 90 out of 111 with persistent asthma recruited were followed up. This was based on the adequacy of sample size required for analysis of comparison before and after ICS therapy. They were reviewed at 3 months to assess the alleviation of symptoms and lifestyle restrictions.

Informed, written consent was obtained prior to recruitment. All participants were educated (by printed leaflets) regarding childhood asthma and its management. Ethical clearance was obtained from the Ethics Committee, Faculty of Medicine, University of Kelaniya, Sri Lanka.

*Statistical analysis:* Data were analyzed using Epi info version 6 and Pepi analysis. Chi square test was used to study the significance for the categorical variables. Matched pair analysis through McNemar chi square test was used to compare variables before and after ICS therapy.

## RESULTS

The mean age of the study sample ( $n=200$ ) was 4.3 y (0.7-11.8 y). Children with mild intermittent, mild persistent, moderate persistent, and severe persistent asthma constituted 45% (90), 38% (76), 15% (30), and 2% (4), respectively. Restrictions on bathing were seen in 186 (93%) children. Of them, 67(36%) had restrictions only during exacerbations, 51(27%) did not have a head bath up to one month after an exacerbation and 68(37%) for more than a month. Bathing restrictions were imposed by the parents in 162(87%), by medical personnel in 21(11%) and

remainder by grandparents and other relatives. Food restrictions were observed in 174 (87%) children. Restricted food items included ice-cream (51%), chilled food/drinks (38%), tomatoes (39%), cow's milk formulae (21%), King coconut water (a liquid drink from tender coconut) (57%), eggs (20%) and banana (9%). Food restrictions were imposed by parents in 148 (85%), by medical personnel in 12 (7%) and remainder by grandparents and other relatives.

Overall, play activities were restricted in 152 (76%) children. 54/152 (33%) reported to have exercise induced asthma; and 63 (39%) had restrictions only during exacerbations. 60 (37%) had restrictions irrespective of the presence of exacerbations. Play activities were restricted by the parents in 133 (82%) and remainder by grandparents and other relatives. In 63 (39%), parents had restricted participation in group play activities. School absenteeism up to 2 days/ month was noted in 48/94 (51%) children, and more than 2 days/ month in 44 (47%).

There was no significant difference in restrictions imposed on bathing, food and play activities in relation to severity of asthma (intermittent vs persistent). Ninety children received ICS and were reviewed 3 months later. At three months review, 64 (71%) were continuing ICS. In 5 (6%) ICS was discontinued by the parents despite medical advice. The rest ( $n=21$ , 23%) were lost to follow up. There was a reduction in day and night symptoms in 45/63 (71%) and 47/64 (73%) children, respectively ( $P<0.001$ ). Also noted was a reduction in the number of hospital admissions in 43/64 (67%), outpatient visits in 45/63(71%), and the need for nebulizations in 47/64 (73%) ( $P<0.001$ ). Restrictions on bathing, food, play activities and school attendance had been waived off in 17/64 (27%,  $P<0.001$ ), 15/64 (23%,  $P=0.008$ ), 16/50 (32%  $P<0.001$ ) and 21/38 (55%,  $P<0.001$ ), respectively.

## DISCUSSION

This study brought to light several important facts about the impact of bronchial asthma on the lifestyles of Sri Lankan children. It highlights the extent to which parents impose lifestyle restrictions on their children with asthma with regard to bathing, food and play activities. Lodha, *et al.*(8) reported food

**WHAT THIS STUDY ADDS?**

- Despite good asthma control with inhaled corticosteroids, caregivers continue to impose lifestyle restrictions on children with asthma in Sri Lanka.

restrictions in 82% and restrictions on physical activity in 66% in their study conducted in India. In contrast to their findings, our study did not show a significant difference in restrictions with regard to asthma severity. This implies that the practice of lifestyle restrictions may be mainly related to myths and beliefs that prevail in our society, rather than to the symptoms of the disease itself.

Inhaled corticosteroid (ICS) therapy improved asthma symptoms significantly. Bathing and food restrictions remained unchanged in about 70% and play activities in more than 50%. Hence, the impact of ICS was more towards symptom improvement than on lifestyles. This emphasizes the role played by ingrained beliefs. 25% of children who were on ICS therapy were lost to follow-up at 3 months. If we assume that all defaulters had worsening of their symptoms, nearly 75% of the study population showed an improvement in their symptoms. Hence, it is likely that the group lost to follow up would have minimal influence on the outcome of our follow up results.

This study reiterates the positive impact of ICS on alleviating symptoms and lifestyle restrictions of childhood asthma. However, the imposition of restrictions on lifestyles seems to be related to myths and beliefs ingrained in the society despite good improvement of asthma symptoms. Therefore, health education to dispel myths is required in the holistic management of children with bronchial asthma.

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