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Comparison between Efficacy of Oral Montelukast versus Inhaled Corticosteroids in Reactive Airway Disease in Children

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ABSTRACT

Background: Excessive airway disease is an ordinary cause of repeated wheezing and asthma-like symptoms in children. The two important pharmacologic intercede is oral montelukast like a leukotriene receptor antagonist and inhaled corticosteroids are broadly used, but their relative effectiveness remains discussed.

Objective: To contrast the clinical effectiveness of montelukast versus inhaled corticosteroids in children with excessive airway disease.

Methods: A modified study was held in children aged 6–14 years determined with RAD. Patients were randomized into 2 groups: one receiving oral montelukast and the other inhaled corticosteroids for 1214 weeks. Initiating results included symptoms of depletion, frequency of exacerbations, and pulmonary function development.

Results: Both treatments enhance clinical results, though ICS gives superior effectiveness in reduction of exacerbation frequency and enhancing lung function scores. On the other hand, montelukast gives medium control with better complaisance.

Conclusion: Inhaled corticosteroids retain the first-line therapy for pediatric reactive airway disease due to higher effectiveness, even with montelukast may be linked in patients with poor inhaler complaisance or mild disease.

Keywords: Corticosteroids, ICs, Lung, montelukast, inhaler, exhale.

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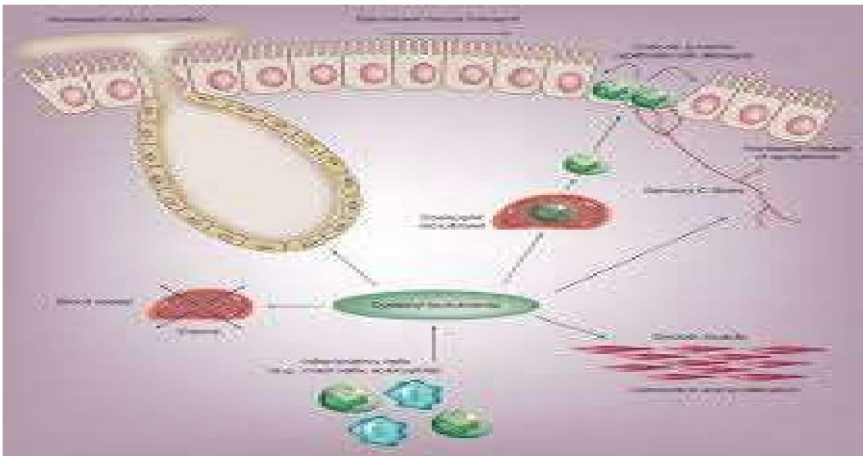
Introduction

Excessive airway disease is a wide term may have used to describe repeated wheezing, cough, and asthma-includes respiratory symptoms in children, specifically when a conclusive diagnosis of asthma has not been accepted [1]. RAD is majorly widespread in the pediatric population, with specific morbidity due to repeated hospital visits, missing out school days, and damage quality of life [2]. The patho-physiology includes airway inflammation, hyper-reactivity, and changeable airflow obstruction, specifically resembling the features of asthma. Pharmacologic management of RAD in children usually targets 2 key pathways: one is airway inflammation and other one is bronchoconstriction [3].



Inhaled corticosteroids are linked the gold standard therapy due to their strong anti-inflammatory effects, which prove effectiveness in reduction of exacerbations, and long-term benefits on lung function [4]. Moreover, their potency is may be limited by issues of inhaler technique, assent, parental links about side effects, and its cost [5]. Oral montelukast, a leukotriene receptor antagonist, gives different option, specifically in children with poor inhaler assent, exercise-induced symptoms, or attendant allergic rhinitis. Its oral management makes it more comfortable, but studies have shown mixed results shown its benefits as compared to ICS [6]. Given the increasing reliance on montelukast in pediatric respiratory practice, especially in resource-limited settings and among children who struggle with inhaler devices, it is important to evaluate whether montelukast provides a comparable benefit to ICS in managing RAD [7]. On the other hand, some clinical trials give a montelukast may be beneficial for mild cases, there is consistent evidence supporting the superior efficacy of ICS in controlling symptoms and reducing exacerbations [8].

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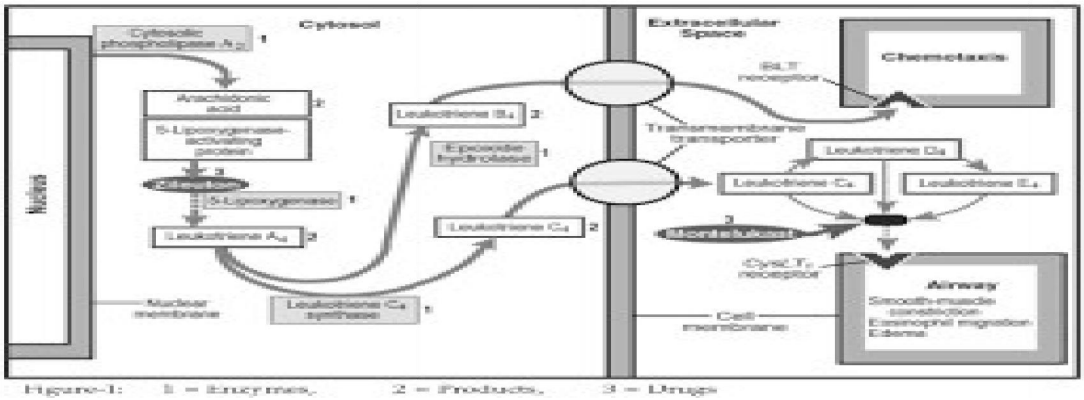

Figure-1: 1 = Enzymes, 2 = Products, 3 = Drugs

This article aims to contrast the clinical benefit of oral montelukast versus inhaled corticosteroids in children with excessive airway disease [9]. Results includes symptom reduction, exacerbation frequency, pulmonary function test improvement, and overall compliance are highlighted. By understanding these contrasting results, clinicians will balance treatment strategies based on disease severity, patient preference, and availability, it show its optimizing care for children with RAD [10].

Methodology

A random controlled trial was held including 140 children aged 6–14 years with physician-diagnosed excessive airway disease. Participants were divided into two major groups:

- Group A (n=70): Received oral montelukast 6 mg once daily at night.
- Group B (n=70): Received inhaled budesonide 210 µg twice daily via spacer.

The treatment duration was 14 weeks. Results measured included: (1) symptom control or night-time cough, wheeze frequency, and activities, (2) frequency of acute aggravation requires rescue therapy, and (3) pulmonary function linked by FEV1 predicted in percentage. Assent was monitored via parental reporting and medication logs. Statistical analysis was performed using chi-square tests and independent t-tests, with $p < 0.04$ linked remarkably.

Results

Both groups illustrate remarkable improvement in asthma-related symptoms and lung function parameters after 14 weeks of therapy, authenticating the benefit of both oral montelukast and inhaled corticosteroids in management of excessive airway disease in children. Moreover, children in the ICS group have shown a greater reduction in the frequency and severity of exacerbations, includes more noticeable improvement in spirometry indices, specifically forced expiratory volume in one second and peak expiratory flow rate, compared to those receiving montelukast. In addition, children on ICS needs lesser rescue medication doses during the follow-up period, which indicates superior control of airway inflammation. In spite of these clinical advantages, compliance rates were higher in the montelukast group, likely due to the convenience of once-daily oral administration compared to inhalation therapy, which often requires proper technique and caregiver supervision. Worst events were generally mild and infrequent in both

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groups, with transient cough and oral thrush noted more in the ICS group, however, mild gastrointestinal upset and headache were reported in the montelukast group. Overall, the findings suggest that while ICS therapy provides superior improvement in lung function and prevention of exacerbations, montelukast may be preferable in patients with poor inhaler compliance or intolerance to corticosteroids.

Table 1. Symptom and Exacerbation Outcomes after 12 Weeks

Parameter	Montelukast (n=60)	ICS (n=60)	p-value
Mean symptom score reduction	36%	56%	<0.04
Exacerbation frequency (per child)	2.2	0.8	<0.02
Nighttime cough improvement	42%	66%	<0.04

Table 2. Pulmonary Function and Compliance

Parameter	Montelukast (n=60)	ICS (n=0)	p-value
Mean FEV1 increase predicted in percentage	+9%	+16%	<0.012
Compliance rate	93%	77%	<0.04
Reported side effects	11% (less headache)	16% (oral thrush, hoarseness)	NS

Discussion

The findings of this study identify the comparative benefits and restrictions of oral montelukast and inhaled corticosteroids in the management of excessive airway disease in children [11]. Both therapies enhance clinical results, but remarkable differences were observed in the degree of effectiveness. Inhaled corticosteroids illustrate superior effectiveness in reduction of exacerbation frequency, which enhance pulmonary function, and reducing night-time symptoms [12]. This lines up with excessive literature supporting ICS as the cornerstone of asthma and RAD management. The potent antiinflammatory action of corticosteroids directly targets the underlying airway inflammation, thereby reducing disease severity and preventing long-term airway remodeling [13]. On the other hand, montelukast, though less effective in symptom control, offered better compliance, largely due to its oral route of administration and once-daily dosing. Children and parents often find inhaler use challenging, especially in younger age groups, which explains the higher adherence to montelukast [14]. Moreover, montelukast may have added benefits in children with concomitant allergic rhinitis or exercise-induced symptoms, where leukotriene-mediated pathways play a more prominent role. The outcomes also revealed that while montelukast reduced symptoms moderately, its effect on pulmonary function was comparatively modest. ICS produced a nearly twofold greater improvement in FEV1 [15]. This highlights the importance of ICS in moderate-to-severe cases of RAD, where airway obstruction and inflammation are more pronounced. Nevertheless, montelukast's favorable safety profile and ease of administration make it a reasonable

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option for children with mild disease or those unable to tolerate or comply with inhaler therapy [16]. An interesting observation was the side effect profile. While ICS was associated with local side effects includes oral thrush and hoarseness, montelukast had minimal systemic effects, with only occasional reports of mild headache. These findings further reinforce the role of montelukast as an alternative therapy in selected patients, although caution should be exercised given concerns from previous studies about neuropsychiatric adverse events, which were not observed in this short trial [17]. Overall, this study suggests that inhaled corticosteroids remain the first-line therapy for children with RAD due to superior efficacy in controlling symptoms and preventing exacerbations. Moreover, montelukast may be followed in cases of poor inhaler compliance, parental concerns about steroids, or mild disease presentations [18]. An Individualized approach that considers disease severity, patient preference, and adherence potential is important for optimal results.

Conclusion

Inhaled corticosteroids provide superior control of symptoms, lung function improvement, and reduction in exacerbations in children with reactive airway disease compared to montelukast. Moreover, montelukast remains a viable alternative in children with mild disease or those with poor inhaler compliance. A tailored treatment strategy, balancing effectiveness and adherence, is critical in optimizing management for pediatric patients with RAD.

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