

Cochrane Database of Systematic Reviews

Anti-leukotriene agents compared to inhaled corticosteroids in the management of recurrent and/or chronic asthma in adults and children (Review)

Chauhan BF, Ducharme FM

Chauhan BF, Ducharme FM. Anti-leukotriene agents compared to inhaled corticosteroids in the management of recurrent and/or chronic asthma in adults and children. *Cochrane Database of Systematic Reviews* 2012, Issue 5. Art. No.: CD002314. DOI: 10.1002/14651858.CD002314.pub3.

www.cochranelibrary.com

Anti-leukotriene agents compared to inhaled corticosteroids in the management of recurrent and/or chronic asthma in adults and children (Review) Copyright © 2014 The Cochrane Collaboration. Published by John Wiley & Sons, Ltd.

[Intervention Review]

Anti-leukotriene agents compared to inhaled corticosteroids in the management of recurrent and/or chronic asthma in adults and children

Bhupendrasinh F Chauhan¹, Francine M Ducharme^{2,3}

¹Clinical Research Unit on Childhood Asthma, Research Centre, CHU Sainte-Justine, Montreal, Canada. ²Department of Paediatrics, University of Montreal, Montreal, Canada. ³Research Centre, CHU Sainte-Justine, Montreal, Canada

Contact address: Francine M Ducharme, Department of Paediatrics, University of Montreal, Montreal, QC, Canada. francine.m.ducharme@umontreal.ca.

Editorial group: Cochrane Airways Group. Publication status and date: Edited (no change to conclusions), comment added to review, published in Issue 12, 2014.

Citation: Chauhan BF, Ducharme FM. Anti-leukotriene agents compared to inhaled corticosteroids in the management of recurrent and/or chronic asthma in adults and children. *Cochrane Database of Systematic Reviews* 2012, Issue 5. Art. No.: CD002314. DOI: 10.1002/14651858.CD002314.pub3.

Copyright © 2014 The Cochrane Collaboration. Published by John Wiley & Sons, Ltd.

ABSTRACT

Background

Anti-leukotrienes (5-lipoxygenase inhibitors and leukotriene receptors antagonists) serve as alternative monotherapy to inhaled corticosteroids (ICS) in the management of recurrent and/or chronic asthma in adults and children.

Objectives

To determine the safety and efficacy of anti-leukotrienes compared to inhaled corticosteroids as monotherapy in adults and children with asthma and to provide better insight into the influence of patient and treatment characteristics on the magnitude of effects.

Search methods

We searched MEDLINE (1966 to Dec 2010), EMBASE (1980 to Dec 2010), CINAHL (1982 to Dec 2010), the Cochrane Airways Group trials register, and the Cochrane Central Register of Controlled Trials (Dec 2010), abstract books, and reference lists of review articles and trials. We contacted colleagues and the international headquarters of anti-leukotrienes producers.

Selection criteria

We included randomised trials that compared anti-leukotrienes with inhaled corticosteroids as monotherapy for a minimum period of four weeks in patients with asthma aged two years and older.

Data collection and analysis

Two review authors independently assessed the methodological quality of trials and extracted data. The primary outcome was the number of patients with at least one exacerbation requiring systemic corticosteroids. Secondary outcomes included patients with at least one exacerbation requiring hospital admission, lung function tests, indices of chronic asthma control, adverse effects, withdrawal rates and biological inflammatory markers.

Main results

Sixty-five trials met the inclusion criteria for this review. Fifty-six trials (19 paediatric trials) contributed data (representing total of 10,005 adults and 3,333 children); 21 trials were of high methodological quality; 44 were published in full-text. All trials pertained to patients with mild or moderate persistent asthma. Trial durations varied from four to 52 weeks. The median dose of inhaled corticosteroids was quite homogeneous at 200 µg/day of microfine hydrofluoroalkane-propelled beclomethasone or equivalent (HFA-BDP eq). Patients treated with anti-leukotrienes were more likely to suffer an exacerbation requiring systemic corticosteroids (N = 6077 participants; risk ratio (RR)



Trusted evidence. Informed decisions. Better health.

1.51, 95% confidence interval (CI) 1.17, 1.96). For every 28 (95% CI 15 to 82) patients treated with anti-leukotrienes instead of inhaled corticosteroids, there was one additional patient with an exacerbation requiring rescue systemic corticosteroids. The magnitude of effect was significantly greater in patients with moderate compared with those with mild airway obstruction (RR 2.03, 95% CI 1.41, 2.91 *versus* RR 1.25, 95% CI 0.97, 1.61), but was not significantly influenced by age group (children representing 23% of the weight *versus* adults), antileukotriene used, duration of intervention, methodological quality, and funding source. Significant group differences favouring inhaled corticosteroids were noted in most secondary outcomes including patients with at least one exacerbation requiring hospital admission (N = 2715 participants; RR 3.33; 95% CI 1.02 to 10.94), the change from baseline FEV₁ (N = 7128 participants; mean group difference (MD) 110 mL, 95% CI 140 to 80) as well as other lung function parameters, asthma symptoms, nocturnal awakenings, rescue medication use, symptom-free days, the quality of life, parents' and physicians' satisfaction. Anti-leukotriene therapy was associated with increased risk of withdrawals due to poor asthma control (N = 7669 participants; RR 2.56; 95% CI 2.01 to 3.27). For every thirty one (95% CI 22 to 47) patients treated with anti-leukotrienes instead of inhaled corticosteroids, there was one additional withdrawal due to poor control. Risk of side effects was not significantly different between both groups.

Authors' conclusions

As monotherapy, inhaled corticosteroids display superior efficacy to anti-leukotrienes in adults and children with persistent asthma; the superiority is particularly marked in patients with moderate airway obstruction. On the basis of efficacy, the results support the current guidelines' recommendation that inhaled corticosteroids remain the preferred monotherapy.

PLAIN LANGUAGE SUMMARY

Anti-leukotriene agents compared to inhaled corticosteroids for people with asthma

In an asthma attack, the airways (passages to the lungs) narrow because of muscle spasms (bronchospasm), inflammation (swelling) and mucus secretion phlegm. The airway passage narrowing results in breathing problems, wheezing and coughing. Inhaled corticosteroids are considered the gold standard to reduce the airway inflammation in adults and children with asthma. Anti-leukotrienes (5-lipoxygenase inhibitors and leukotriene receptors antagonists) are anti-inflammatory drugs that may have fewer adverse effects than inhaled corticosteroids. The review suggests that anti-leukotrienes are safe, but less effective than a low dose of inhaled corticosteroids.