

## FPIN's Clinical Inquiries

### Leukotriene Receptor Antagonists for the Treatment of Allergic Skin Disorders

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#### Clinical Question

Do leukotriene receptor antagonists have any effect on atopic dermatitis or other allergic skin disorders?

#### Evidence-Based Answer

Evidence from small trials suggests that leukotriene receptor antagonists may have short-term effectiveness in reducing sleep disturbance and the observed intensity of atopic dermatitis in adults and children. (Strength of Recommendation [SOR]: B, based on small randomized controlled trials [RCTs] and case series). There are inconsistent results regarding the effectiveness of leukotriene receptor antagonists for treatment of chronic idiopathic urticaria when used alone or in combination with antihistamines (SOR: B, based on meta-analysis of small, limited trials). Larger clinical trials are needed to assess the benefit of leukotriene receptor antagonists for immune-mediated skin disorders.

#### Evidence Summary

Leukotriene receptor antagonists, such as montelukast (Singulair) and zafirlukast (Accolate), have been used for the treatment of asthma and allergies; however, their role in the treatment of skin disorders (e.g., atopic dermatitis, urticaria) is uncertain.

Leukotriene receptor antagonists have been studied in treating atopic dermatitis for up to eight weeks. In four trials enrolling adults, the effectiveness of montelukast was measured using clinical scoring of the severity of atopic dermatitis. The scoring assessed the patient-oriented outcome of severity of insomnia, as well as the distribution of the atopic dermatitis and the intensity of its appearance (e.g., erythema, edema, oozing, excoriation, lichenification, xerosis).<sup>1-4</sup> The studies demonstrated a statistical reduction in sleep disturbance and the observed intensity of the rash. One case series and one small RCT suggested that montelukast was effective in treating atopic dermatitis in children.<sup>5,6</sup> However, one larger trial of 59 patients with atopic dermatitis demonstrated no difference between montelukast and placebo.<sup>7</sup> The only study evaluating leukotriene receptor antagonists in atopic dermatitis beyond eight weeks failed to demonstrate effectiveness.<sup>8</sup> *Table 1* describes studies that used montelukast to treat atopic dermatitis.<sup>1-6</sup>

**Table 1. Studies Using Montelukast (Singulair) to Treat Atopic Dermatitis**

| <i>Study type</i>                         | <i>No. of Patients</i> | <i>Comparison</i>   | <i>Duration</i> | <i>Reported outcome</i> |
|---|------------------------|---|-----------------|-------------------------|
| Single-blind RCT <sup>1</sup>             | 32 adults              | Cetirizine (Zyrtec), clarithromycin (Biaxin), topical corticosteroids, hydrating agents | Six weeks       | No difference           |
| Double-blind RCT <sup>2</sup>             | 20 adults              | Placebo   | Six weeks       | Favors LRAs             |
| Open-label RCT <sup>3</sup>               | 31 adults              | Placebo   | -               | Favors LRAs             |
| Double-blind crossover trial <sup>4</sup> | Eight adults           | -   | Eight weeks     | Favors LRAs             |
| Case series <sup>5</sup>                  | Seven children         | -   | 12 weeks        | Favors LRAs             |
| Double-blind crossover trial <sup>6</sup> | 15 children            | Placebo   | Four weeks      | Favors LRAs             |

*LRA = leukotriene receptor antagonist; RCT = randomized controlled trial. Information from references 1 through 6.*

There is one meta-analysis of the effectiveness of leukotriene receptor antagonists as a class, as well as one of the effectiveness of montelukast individually in the treatment of chronic or physical urticaria.<sup>9,10</sup> The authors of the meta-analysis on leukotriene receptor antagonists reviewed 26 studies involving more than 500 patients using leukotriene receptor antagonists; 11 were case reports, seven were case series, and eight represented controlled trials. The authors reported that evidence for the effectiveness of montelukast and zafirlukast for urticaria was limited.<sup>9</sup> Authors of the meta-analysis on montelukast found six clinical trials using montelukast alone or in combination with H<sub>1</sub> antihistamines.<sup>10</sup> Studies reviewed were reported to be inconsistent in demonstrating the effectiveness of montelukast. Each meta-analysis recommended large-scale, prospective, controlled trials to determine which patients with urticaria may benefit from treatment with leukotriene receptor antagonists.

One report of Prescription-Event Monitoring in England evaluated the effectiveness of montelukast in patients with atopic dermatitis or urticaria. Of the 16 cases reported, five patients reported improvement with montelukast, 10 patients had an alternative explanation for improvement, and one patient could not be assessed.<sup>11</sup>

## Recommendations from Others

No recommendations for the use of leukotriene receptor antagonists to treat urticaria or atopic dermatitis were found in a search of the National Library of Medicine, the National Guideline Clearinghouse, or the American Academy of Dermatology. Leukotriene receptor antagonists (montelukast and zafirlukast) do not have approval from the U.S. Food and Drug Administration for dermatologic uses.

## Clinical Commentary

Allergic skin disorders, typified by atopic dermatitis, are a frustrating ailment often seen by family physicians, especially in children. There are many tried (and some "true") treatments, but most of these treatments are inconvenient to use or are not universally effective. Although it would be wonderful to have a new treatment that is effective and easy (e.g., once daily oral treatment), this review summarizes the relatively modest effectiveness of leukotriene receptor antagonists for allergic skin disorders.

Fortunately, topical treatment with corticosteroids or the more expensive calcineurin inhibitors (immune modulators), pimecrolimus (Elidel) and tacrolimus (Protopic), are highly effective. In addition, I have found that time-tested and first-line recommendations, such as warm (versus hot) baths or showers, application of emollients, or oral antihistamines (to reduce itching) can also be useful. Although these treatments may not be glamorous, they are effective.

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