

Short communication

Fexofenadine reduces nasal congestion in perennial allergic rhinitis

Background: Nasal congestion is the predominant symptom in perennial allergic rhinitis (PAR), and it seems to be mainly related to the late-phase inflammatory events. The present pilot study aimed to evaluate the therapeutic effect exerted by fexofenadine in patients with PAR due to mite allergy.

Methods: This study was a parallel, double-blind, randomized, three-arm (1:1:1), placebo-controlled study. Thirty-one subjects with PAR were enrolled and received double-blind medication: fexofenadine 120 or 180 mg, or placebo, once a day for 28 days.

Results: The total symptom score was reduced by fexofenadine (both dosages) at V2 ($P=0.007$), whereas placebo did not modify it. Nasal congestion decreased after 1 week of treatment with fexofenadine 120 ($P=0.027$) and 180 ($P=0.01$), but not with placebo ($P=NS$). At V3, fexofenadine (both dosages) significantly reduced nasal congestion ($P=0.011$ and $P=0.007$, respectively), by placebo did not show any significant effect.

Conclusions: This pilot study represents the first evidence of the efficacy of fexofenadine in PAR, and also the control of the nasal congestion. We suggest performing larger trials to confirm these preliminary findings.

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Sensitization to allergens of house-dust mite (i.e., *Dermatophagoides* species) causes perennial allergic rhinitis (PAR). Mite allergy is characterized by the persistence of allergic inflammation at the mucosal level due to the perennial exposure to the allergen (1).

Nasal congestion is the predominant symptom in PAR, since other typical nasal symptoms show less intensity than in seasonal allergic rhinitis (SAR) (2). Moreover, nasal congestion is considered to be mainly related to the late-phase inflammatory events (3).

Treatment of PAR is firstly based on avoidance of allergen exposure, but if that is unsuccessful, antihistamine prescription is recommended as first-line treatment (4).

Fexofenadine is a nonsedating, nonimpairing, long-acting, third-generation antihistamine with highly selective, peripheral histamine H_1 -receptor antagonist activity, effective in the relief of SAR and chronic idiopathic urticaria symptoms (5). Moreover, a previous *in vitro* study has shown that fexofenadine inhibits ICAM-1 expression in conjunctival epithelial cells (6).

The present pilot study aimed to evaluate the therapeutic effect exerted by fexofenadine in patients with PAR due to mite allergy.

Material and methods

This study was a parallel, double-blind, randomized, three-arm (1:1:1), placebo-controlled study. Thirty-one subjects (16 men and 15 women, mean age 27 years) with PAR were enrolled and received double-blind medication: fexofenadine 120 or 180 mg, or placebo, once a day for 28 days. Subjects participated in the study for at least 28 days, and they made three visits: at baseline (V1), after 7 days (V2), and after 28 days (V28). Only patients who met all the following criteria were eligible for inclusion in the study: men and women aged 18–50; history of allergic rhinitis (AR) due to natural exposure to mite allergen for the previous 2 years; rhinitis symptoms for at least 2 weeks; total symptom score (TSS) minimum value of ≥ 6 at baseline; women of child-bearing potential not pregnant, lactating, or likely to become pregnant using medically accepted, adequate form of birth control; and written informed consent obtained prior to entry to the study. Exclusion criteria were as follows: sensitization to seasonal allergens; upper respiratory tract infections within 30 days before the study; and rhinitis related to anatomic problems (polyps, septum deviation, etc.). The following symptoms were assessed by the patient and by the investigator at each visit: nasal congestion; sneezing; rhinorrhea; itchy nose; itchy palate and/or throat; and itchy, watery, red eyes. Each symptom was evaluated on the following scale: 0: absent, 1: mild (symptom was present but was not annoying or troublesome), 2: moderate (symptom was frequently troublesome but did not interfere with either normal daily activity or sleep), 3: severe (symptom was sufficiently troublesome to have interfered with normal daily activity or sleep), 4: very severe (symptom was so severe as to warrant immediate visit to the physician).

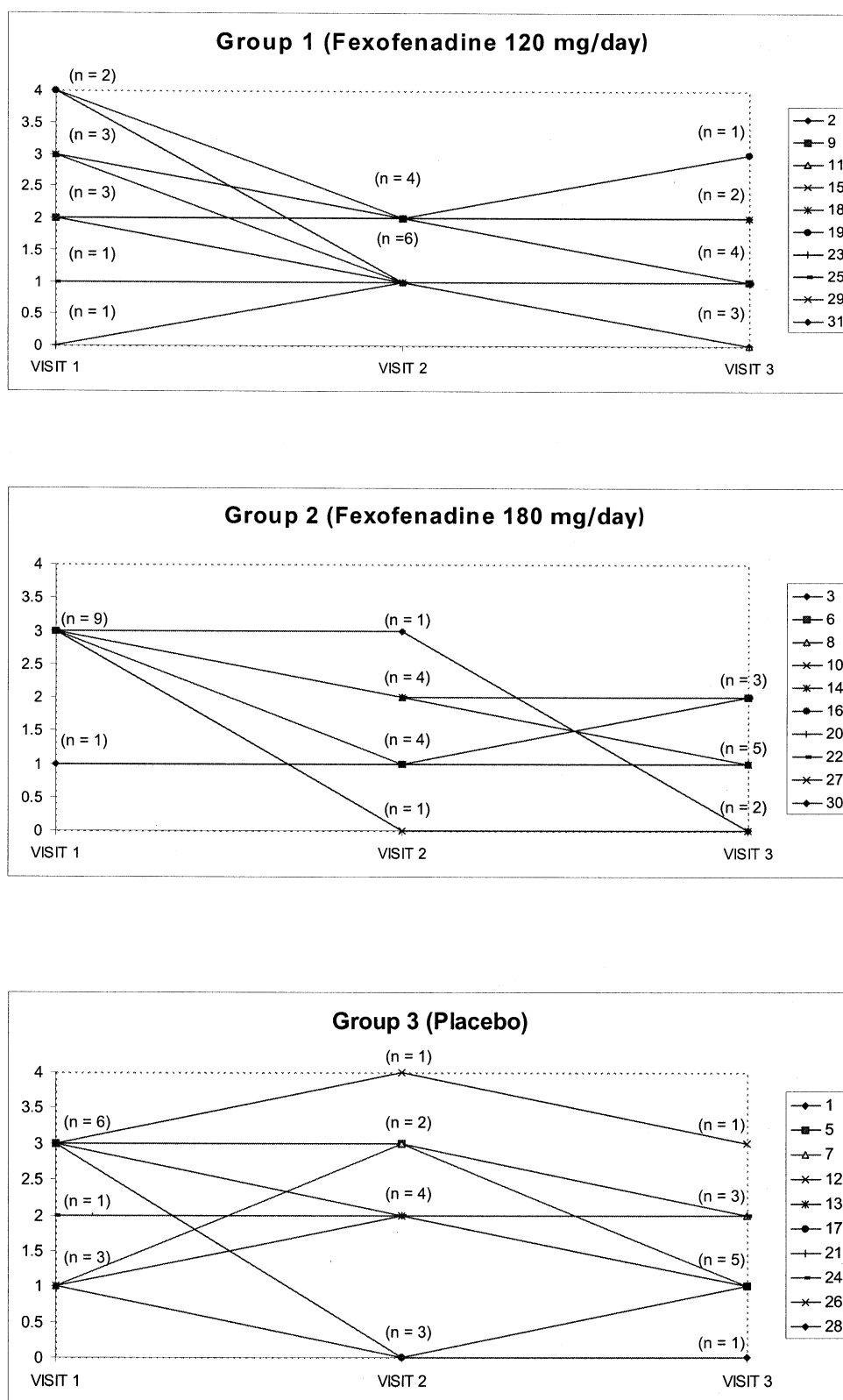


Figure 1. Nasal congestion symptom score assessed during study.

Statistical analysis was performed with the chi-square (for demographic data), the Friedman (for intragroup analysis), and the Kruskal-Wallis (for intergroup analysis) tests. Symptoms were evaluated individually and as TSS.

Results

Thirty-one patients were included in the study. The demographic characteristics (age, sex, allergic history, and symptoms) were homogeneous in the three groups ($P=NS$). One patient from the fexofenadine 120 mg/day treatment group was excluded from the analysis for noncompliance with therapy during the 7 days before the last visit. A total of 30 patients was available for analysis.

TSS was reduced by fexofenadine (both dosages) at V2 ($P=0.007$), whereas placebo did not modify it. All treatments were able to reduce TSS at V3 ($P=0.005$).

Nasal congestion decreased after 1 week of treatment with fexofenadine 120 ($P=0.027$) and 180 mg ($P=0.01$), but not with placebo ($P=NS$). At V3, fexofenadine (both dosages) significantly reduced nasal congestion ($P=0.011$ and $P=0.007$ respectively), but placebo did not show any significant effect (Fig. 1).

Fexofenadine 120 mg was also able to reduce sneezing at V2 ($P<0.05$) and at V3 ($P=0.01$), rhinorrhea at V3 ($P<0.05$), nasal itching at V2 ($P=0.01$) and at V3 ($P<0.05$), and itchy palate and throat at V3 ($P<0.05$).

Fexofenadine 180 mg significantly reduced sneezing at V3 ($P=0.01$) and rhinorrhea at V2 ($P=0.02$) and at V3 ($P=0.02$).

Finally, in spite of the small sample size, the comparison among groups showed a significant difference for rhinorrhea between the fexofenadine 180 mg group and the placebo group ($P=0.02$). No other difference

was observed in comparing the three treatment groups. No significant adverse events were observed in the treated groups.

Discussion

Antihistamines are commonly prescribed in the treatment of AR since they antagonize the effects of histamine at the H_1 receptor. Antihistamines are particularly effective in controlling rhinorrhea, itch, and sneezing, but have little effect on nasal congestion (7). A possible explanation is that histamine is not the main cause of nasal congestion, since other mediators (such as leukotrienes, prostaglandins, and kinins) and cellular inflammation are involved in this symptom. Thus, only a few antihistamines (azelastine, loratadine, and mizolastine) are reported to exert a significant activity against nasal congestion in PAR (7). It seems reasonable to hypothesize that efficacy against nasal congestion is based on additional antiallergic/anti-inflammatory activities, as broadly reported (4). Nevertheless, mizolastine was able to reduce nasal congestion in a large PAR trial after only 4 weeks of treatment (8).

The present study shows that fexofenadine reduces nasal congestion early, already in 7 days. This activity confirms the efficacy demonstrated by fexofenadine in controlling nasal congestion in patients with SAR (9). This early effect might partially depend on the anti-allergic activity of fexofenadine, as nasal congestion is a symptom strictly limited to allergic inflammation (6).

In conclusion, this pilot study represents the first evidence of the efficacy of fexofenadine in PAR, and in the control of nasal congestion. We suggest that larger trials using acoustic rhinometry and rhinomanometry be performed to confirm these preliminary findings.

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