

# Comparison of the efficacy, safety and quality of life provided by fexofenadine hydrochloride 120 mg, loratadine 10 mg and placebo administered once daily for the treatment of seasonal allergic rhinitis

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## Summary

**Background** As there have been no previously published studies, this multinational, double-blind, randomized, placebo-controlled, parallel group study compared the efficacy, safety and impact on quality of life (QoL) in seasonal allergic rhinitis patients (SAR) of fexofenadine and loratadine (with placebo), when administered once daily.

**Methods** Six hundred and eighty-eight SAR patients were randomized to receive fexofenadine HCl 120 mg, loratadine 10 mg or placebo, once daily for 2 weeks. The key parameters were the change from baseline in: mean 24-h reflective total symptom scores (TSS); sum of four individual symptom scores, excluding nasal congestion; instantaneous TSS; individual symptom scores including nasal congestion; and Rhinoconjunctivitis Quality of Life Questionnaire (RQLQ). Adverse events were recorded.

**Results** Mean 24-h reflective and instantaneous TSS were significantly reduced by both fexofenadine HCl (both  $P \leq 0.0001$ ) and loratadine ( $P \leq 0.001$  and  $P \leq 0.005$ , respectively) compared with placebo ( $n = 639$ ). Among individual symptom scores, fexofenadine HCl was significantly better than loratadine in improving 24-h reflective itchy, watery, red eyes, as well as relieving nasal congestion ( $P \leq 0.05$  for both). Fexofenadine HCl was also significantly better than loratadine ( $P \leq 0.03$ ) and placebo ( $P \leq 0.005$ ) in improving QoL, and the differences were of a magnitude considered to be clinically relevant. Loratadine had no statistically significant effect on QoL compared with placebo. The incidence of adverse events was low and similar across all treatment groups.

**Conclusion** Fexofenadine HCl and loratadine administered once daily are effective and well tolerated in SAR. In this study, fexofenadine HCl was significantly more effective than loratadine in relieving eye symptoms and nasal congestion. Furthermore, fexofenadine was significantly better than loratadine in improving QoL.

**Keywords:** antihistamine, efficacy, fexofenadine hydrochloride, loratadine, once-daily, placebo, quality of life, safety, seasonal allergic rhinitis, total symptom score

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## Introduction

The efficacy of newer H<sub>1</sub>-receptor antagonists in relieving the troubling symptoms of seasonal allergic rhinitis (SAR) is well-established [1]. For example, both fexofenadine HCl 120 mg

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and loratadine 10 mg once daily have been shown to be superior to placebo in reducing the symptoms of SAR [2–6].

While the classical symptoms of SAR are physically distressing, the impact of the disease on patients' well-being or health-related quality of life has not been well described [7–9]. It is therefore recommended that in addition to assessing physical symptoms, assessments of quality of life should be included in all clinical studies to measure the effectiveness of treatment in improving patients' well-being [8]. The Rhinoconjunctivitis Quality of Life Questionnaire (RQLQ) has been developed and validated specifically to assess quality of life in SAR, and has been shown to be a reproducible and responsive instrument [9].

As there have been no previously published comparisons between antihistamines for efficacy and quality of life, the aim of the present study was to compare the efficacy and impact on patients' quality of life of fexofenadine HCl 120 mg with loratadine 10 mg and placebo, when administered once daily in patients with SAR.

## Materials and methods

### Patients

Subjects between 12 and 75 years of age with a medical history of SAR for at least the previous 2 years were recruited from centres throughout nine European countries and South Africa (subjects in Germany were between 18 and 75 years of age). For inclusion in the study, all patients had to have a positive reaction (defined as a weal of  $\geq 3$  mm in diameter compared with a diluent control) to an epicutaneous skin test to grass and/or tree pollen at the screening visit or during the previous 12-month period, as well as a history of responding to antihistamines to relieve allergic symptoms.

Patients were excluded from the study if they had experienced an upper respiratory tract infection or sinusitis within the previous 30 days, or had suffered any clinically significant medical or mental disorder that might affect the implementation of the protocol or the interpretation of the resulting data. Further exclusion criteria included: a recent history of drug abuse, females who were pregnant or lactating, and a history of hypersensitivity to any of the investigational treatments. Patients were not allowed to take the following

concomitant medications immediately prior to or during the study period: systemic or nasal corticosteroids, nedocromil or cromolyn sodium, oxatomide, oral or nasal decongestants, alpha adrenergic drugs, or other antihistamines. Patients were also excluded if they had taken any investigational drug within the 30 days before the study started.

The study protocol was approved by independent ethics committees, and all patients (or their parents, where applicable) were required to give written informed consent before participation.

### Study design

This was a multinational, multicentre, double-blind, parallel group, randomized, placebo-controlled study. Following a placebo run-in phase of 3–7 days (the baseline period), patients were randomized to receive one capsule of either fexofenadine HCl 120 mg, loratadine 10 mg, or placebo, once each morning for 14 days. Each patient was required to visit the physician four times over a 4-week period (Fig. 1). This included an initial screening visit, a second visit (i.e. visit 2) following the placebo run-in period, a third visit (i.e. visit 3) after 7 days of treatment, and a final visit after 14 days of treatment (i.e. visit 4). The investigator telephoned all patients 7 days after visit 4 to follow-up on any adverse events.

### Symptom assessments

Symptoms of SAR in this study were assessed during the placebo and treatment period using a total symptom score (TSS). TSS was defined as the sum of the four individual symptom scores assessed by the patient for: (1) sneezing, (2) rhinorrhea, (3) itchy nose, palate and/or throat, and (4) itchy, watery and/or red eyes. Each of these symptoms, plus nasal congestion, was evaluated on a five-point scale: 0 – absent; 1 – mild (symptom present but not annoying or troublesome); 2 – moderate (symptom frequently troublesome but not interfering with normal daily activity or sleep); 3 – severe (symptom sufficiently troublesome to interfere with normal daily activity or sleep); 4 – very severe (symptom severe enough to warrant an immediate visit to the physician).

| Visit 1<br>(screening) | Visit 2<br>(randomization)                                          | Visit 3<br>(during treatment) | Visit 4<br>(end of treatment) | Follow-up<br>(by telephone) |
|------------------------|---------------------------------------------------------------------|-------------------------------|-------------------------------|-----------------------------|
| 3–7 days               | 7 days                                                              | 7 days                        | 7 days                        |                             |
| Placebo<br>run-in      | Fexofenadine 120 mg, or<br>loratadine 10 mg, or placebo, once daily |                               |                               | Follow-up                   |

Fig. 1. Summary of study design

At the screening visit the patients' reflective TSS for the previous 24 h was required to be  $\geq 6$ , and with two or more symptoms rated as moderate or severe. Patients also underwent a physical examination.

Throughout the placebo run-in and treatment period, patients completed symptom diaries daily at 08:00 h ( $\pm 1$  h), i.e. before taking study medication, to subjectively rate the severity of their allergy symptoms both instantaneously for the previous hour (to capture the symptoms at the time of trough plasma concentration), and reflectively for the previous 24 h.

The average baseline TSS was calculated as the mean of the daily TSS scores during the baseline period, commencing with the first assessment of symptoms on the first day of placebo treatment and ending with the final assessment on the morning of visit 2 (i.e. 3–7 days of placebo run-in). The average treatment TSS was calculated as the mean of the daily TSS scores during the double-blind treatment period, starting with patients' first assessment after taking double-blind study medication.

During visit 4, both the patient and physician assessed the overall effectiveness of the study medication throughout the entire double-blind treatment period, using a five-point scale: 0 – complete relief (symptoms not present); 1 – marked relief (symptoms vastly improved and, although still present, rarely troublesome); 2 – moderate relief (symptoms noticeably improved but still present and may be troublesome); 3 – slight relief (symptoms present with only minimal improvement); 4 – no relief/worse (symptoms were unchanged or worse).

In addition, each score was classified according to whether treatment was successful (score of 0 or 1) or not successful (score of 2, 3 or 4).

#### *Efficacy parameters*

The primary efficacy parameter was the change in the mean 24-h reflective TSS during the double-blind treatment period from that during the baseline period. The secondary efficacy parameters were the change from baseline in the mean instantaneous TSS and mean severity score of the individual reflective symptoms, including nasal congestion. The patients' and physicians' evaluations of overall effectiveness of study medication were also measured.

#### *Quality of life assessment*

Patients were asked to complete the self-administered version of the RQLQ [10] at each visit. As the questionnaire was not available in all languages, quality of life data were collected from 509 patients in: Austria, Belgium, France, Germany, Italy and South Africa. The RQLQ consists of seven domains: sleep, practical problems, nasal symptoms, eye symptoms, non-nose/eye symptoms, activity limitations

and emotional function. Each question is scored between 0 (i.e. not troubled) and 6 (i.e. extremely troubled). The results are expressed as the mean score for the overall quality of life and for each domain.

#### *Adverse event monitoring*

Throughout the study, all adverse events were recorded including treatment-related adverse events classified by treatment and system organ class. Also monitored were those patients who discontinued from the study due to adverse events. Changes in blood pressure or heart rate from baseline were also analysed as safety variables.

#### *Data analysis*

Demographic and baseline characteristics (including age, sex and race) were assessed between the three treatment groups using the Mantel–Haenszel test for the categorical variables, and a Kruskal–Wallis test for the continuous variables.

Changes from baseline for all efficacy parameters were analysed (with the exception of the patients' and physicians' evaluations of overall effectiveness of study medication) using an analysis of covariance (ANCOVA), with treatment and centre as main effects (small centres were pooled for analysis) and the mean baseline value as covariate. Point estimates and 95% confidence intervals were calculated for the mean differences in change between each of the treatment groups.

The patients' and physicians' evaluations of overall effectiveness of study medication were presented as the proportion of patients whose treatment was successful for each of the treatment groups.

Change from baseline (visit 2) to end of study (visit 4) for RQLQ was analysed by ANCOVA, with treatment and pooled centre as main effects, and baseline value as covariate. For patients missing a visit 4 assessment, the last observation carried forward (LOCF) approach was used. Change from baseline in RQLQ individual domain assessments was descriptively assessed. For the RQLQ, a difference in mean scores between treatment groups of 0.5 can be considered clinically important [11]. In addition to estimating the mean differences between treatment groups, the proportion of patients experiencing improvements and deteriorations greater than 0.5 for each treatment group was calculated and expressed as the number needed to treat (NNT) [12].

## **Results**

#### *Patient population*

Six hundred and eighty-eight patients were randomized

| Characteristic     | Treatment group                  |                            |                         |                       |
|--------------------|----------------------------------|----------------------------|-------------------------|-----------------------|
|                    | Fexofenadine HCl<br><i>n</i> (%) | Loratadine<br><i>n</i> (%) | Placebo<br><i>n</i> (%) | Total<br><i>n</i> (%) |
| <i>Sex</i>         |                                  |                            |                         |                       |
| Male               | 101 (43.5)                       | 101 (44.3)                 | 104 (46.2)              | 306 (44.7)            |
| Female             | 131 (56.5)                       | 127 (55.7)                 | 121 (53.8)              | 379 (55.3)            |
| Total              | 232 (100.0)                      | 228 (100.0)                | 225 (100.0)             | 685 (100.0)           |
| <i>Race</i>        |                                  |                            |                         |                       |
| Caucasian          | 210 (90.5)                       | 207 (90.8)                 | 201 (89.3)              | 618 (90.2)            |
| Black              | 2 (0.9)                          | 3 (1.3)                    | 5 (2.2)                 | 10 (1.5)              |
| Asian/Oriental     | 4 (1.7)                          | 3 (1.3)                    | 5 (2.2)                 | 12 (1.8)              |
| Multiracial        | 16 (6.9)                         | 15 (6.6)                   | 14 (6.2)                | 45 (6.6)              |
| Total              | 232 (100.0)                      | 228 (100.0)                | 225 (100.0)             | 685 (100.0)           |
| <i>Age (years)</i> |                                  |                            |                         |                       |
| <i>n</i>           | 232                              | 228                        | 225                     | 685                   |
| Mean               | 30.9                             | 31.9                       | 30.6                    | 31.2                  |
| SD                 | 11.51                            | 12.22                      | 12.14                   | 11.95                 |

**Table 1.** Summary of the patient demographics and baseline characteristics ( $n = 685$ )

from 58 centres to receive fexofenadine HCl 120 mg (232 patients), loratadine 10 mg (228 patients) or placebo (225 patients), once daily. Six hundred and eighty-five patients received study medication and all of these were included in the safety population. Forty-six patients had no 24-h reflective TSS recordings either at baseline and/or during the treatment period, and were thus excluded from the intention to treat (ITT) analysis. Of the 46 patients who were excluded, 15 were from the fexofenadine HCl treatment group, 20 were from the loratadine group and 11 were from the placebo group. Six hundred and thirty-nine patients were therefore included in the efficacy ITT population. Seventy-one patients withdrew from the study during the double-blind treatment period; the reasons for withdrawal included the patient choosing to discontinue, and the use of prohibited concomitant medication(s). Twenty-two patients withdrew from the fexofenadine HCl group, 27 patients from the loratadine group and 25 from the placebo group.

Of the ITT population, 509 patients completed the RQLQ at visit 2 and at visits 3 or 4, and their data were therefore included in the ANCOVA analysis. Out of these patients, 173 were in the fexofenadine HCl group, 166 were in the loratadine group and 170 were in the placebo group.

There were no significant differences between the patients in the fexofenadine HCl, loratadine and placebo groups in terms of age, sex, race and overall symptom severity before treatment. The patient demographics and baseline characteristics are given in Table 1.

### Efficacy

In the ITT analysis both fexofenadine HCl and loratadine significantly reduced the mean 24-h reflective TSS ( $P \leq 0.0001$  and  $P \leq 0.001$ , respectively), and the instantaneous TSS ( $P \leq 0.0001$  and  $P \leq 0.005$ , respectively), from baseline compared with placebo (Figs 2 and 3).

Both fexofenadine HCl and loratadine significantly reduced the mean 24-h reflective symptom score from baseline compared with placebo for: sneezing; rhinorrhea; itchy nose, palate or throat; and itchy, watery or red eyes ( $P \leq 0.005$  and  $P \leq 0.05$ , respectively; Fig. 4). However, fexofenadine HCl was significantly better at improving 24-h

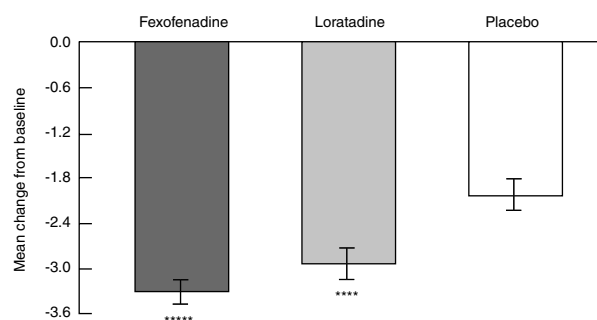


**Fig. 2.** Histogram showing the mean 24-h reflective total symptom score from baseline for fexofenadine HCl 120 mg once daily, loratadine 10 mg once daily, and placebo ( $n = 639$ ). All  $P$ -values are for the treatment group vs placebo: \*\*\*\* $P \leq 0.001$ ; \*\*\*\*\* $P \leq 0.0001$

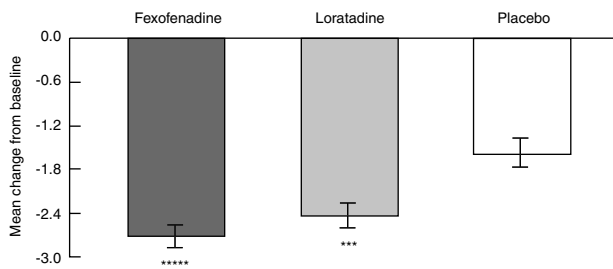


**Fig. 3.** Histogram showing the mean instantaneous (trough) total symptom score from baseline for fexofenadine HCl 120 mg once daily, loratadine 10 mg once daily, and placebo ( $n = 639$ ). All  $P$ -values are for the treatment group vs placebo: \*\*\*\* $P \leq 0.005$ ; \*\*\*\*\* $P \leq 0.0001$

reflective itchy, watery or red eyes compared with loratadine ( $P \leq 0.05$ ; Fig. 4). In addition, fexofenadine HCl was significantly better than both placebo and loratadine in reducing 24-h reflective nasal congestion ( $P \leq 0.05$ ), whereas loratadine was not significantly different from placebo (Fig. 4).

In the assessment of overall effectiveness of study medication, there was no significant difference between the treatment groups. The percentages for overall treatment success from the physicians' assessments were 44, 40 and 36% in the fexofenadine HCl, loratadine and placebo groups, respectively, and 47, 42 and 37%, respectively, in the patients' assessments.

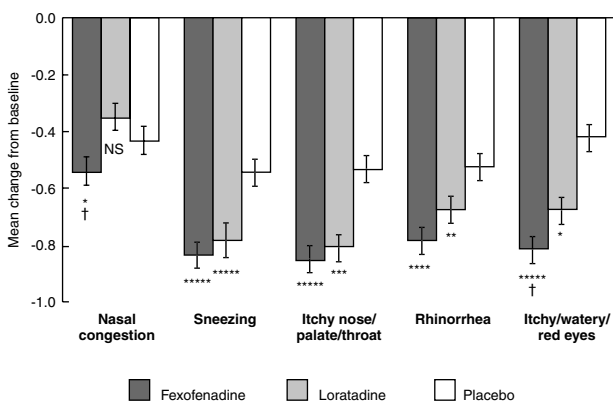


**Fig. 4.** Histogram showing the mean 24-h reflective individual symptom scores from baseline for fexofenadine HCl 120 mg once daily, loratadine 10 mg once daily, and placebo ( $n = 639$ ). All  $P$ -values are for the treatment group vs placebo: NS = non-significant; \* $P \leq 0.05$ ; \*\* $P \leq 0.01$ ; \*\*\* $P \leq 0.005$ ; \*\*\*\* $P \leq 0.001$ ; \*\*\*\*\* $P \leq 0.0001$ ;  $P$ -value for fexofenadine HCl vs loratadine: † $P \leq 0.05$ .

### Quality of life

Baseline overall RQLQ scores in each of the three treatment groups were similar; the mean  $\pm$  SD was  $2.82 \pm 1.05$ ,  $2.76 \pm 1.09$  and  $2.75 \pm 1.03$  for fexofenadine HCl, loratadine and placebo, respectively ( $P = 0.7689$ ). For overall quality of life, there was a significant improvement from baseline for all the treatment groups (mean improvement was 1.25, 1.00 and 0.93 for fexofenadine HCl, loratadine and placebo, respectively) ( $P < 0.0001$ ; Table 2). However, the improvement in the fexofenadine HCl group was significantly greater than obtained in either the loratadine ( $P \leq 0.03$ ) or placebo groups ( $P \leq 0.005$ ) (Fig. 5). The difference in improvement in the fexofenadine HCl group compared with the loratadine group was only 0.25 which is less than the Minimal Important Difference (MID) of 0.5 [11]. However, when expressed as NNT, only 8.4 patients need to be treated with fexofenadine HCl for one to have a clinically important improvement in their quality of life compared with if they had taken loratadine (Table 3). Similarly, the difference in improvements seen in the fexofenadine HCl group compared with the placebo group was 0.32, with a resultant NNT of 7.2. In contrast, there was no significant improvement in quality of life obtained with loratadine compared with placebo and the difference in improvements in RQLQ between the loratadine and placebo groups was only 0.07. Changes observed in each of the seven domains of the RQLQ were very similar to the changes observed for the overall score.

### Safety

No serious adverse events were reported during the study, and there were no clinically significant changes observed for heart rate or blood pressure in any of the treatment groups. The most frequently reported adverse events were similar between all treatment groups and included lack of energy (i.e. asthenia), diarrhoea, nausea, headache,

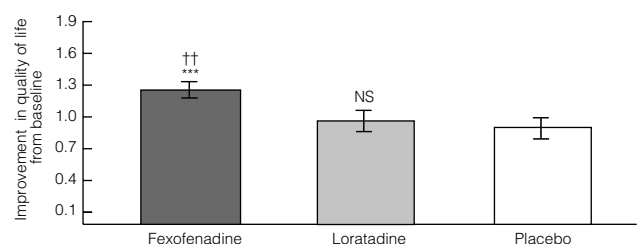


**Fig. 5.** Histogram showing the mean overall quality of life from baseline for fexofenadine HCl 120 mg once daily, loratadine 10 mg once daily, and placebo ( $n = 509$ ).  $P$ -values for the treatment group vs placebo: \*\*\* $P \leq 0.005$ ; NS = non-significant;  $P$ -value for fexofenadine HCl vs loratadine: †† $P \leq 0.03$

|                       | Mean change for treatment groups: |                |                |
|-----------------------|-----------------------------------|----------------|----------------|
|                       | Fexofenadine HCl                  | Loratadine     | Placebo        |
| Activity limitations  | -1.72                             | -1.41          | -1.01          |
| Sleep                 | -1.00                             | -0.73          | -0.78          |
| Non-nose/eye symptoms | -0.93                             | -0.75          | -0.73          |
| Practical problems    | -1.72                             | -1.27          | -1.29          |
| Nasal symptoms        | -1.57                             | -1.13          | -1.13          |
| Eye symptoms          | -1.27                             | -1.07          | -0.90          |
| Emotional function    | -1.05                             | -0.79          | -0.78          |
| Overall score         | -1.25 ± 0.081*                    | -1.00 ± 0.084* | -0.93 ± 0.084* |

\* $P = 0.0001$ .

somnolence and pharyngitis. These are summarized in Table 4.

A total of 112 (16.4%) of the patients from the safety population reported adverse events during the study. Of these, at least one adverse event was reported by 39 of the patients who had received fexofenadine HCl, by 40 of those who had received loratadine, and by 33 of those who had received placebo. Only one patient from each of the fexofenadine HCl and loratadine treatment groups reported an adverse event that was defined as definitely related to treatment, and 17 patients (five from each of the fexofenadine HCl and loratadine treatment groups, and seven patients from the placebo group) reported adverse events that were probably related to treatment. Only 15 patients withdrew due to adverse events (three from the fexofenadine HCl treatment group, five from the loratadine group, and seven from the group receiving placebo).

## Discussion

This multicentre, double-blind, placebo-controlled study demonstrates that both fexofenadine HCl 120 mg and loratadine 10 mg administered once daily are effective and well tolerated in the treatment of SAR symptoms. However, in the current study – which is the first to compare fexofenadine HCl and loratadine once daily – fexofenadine HCl has been shown to be significantly better than loratadine in improving itchy, watery, red eyes, nasal congestion, and patients' quality of life.

The findings from the current study show that fexofenadine HCl significantly relieves the symptoms of SAR compared with placebo and that this relief is maintained over the full 24 h (including trough levels). These results were obtained despite a relatively high placebo response, which can commonly occur in clinical studies in SAR. The findings are also in agreement with the results from previous

studies with fexofenadine HCl 120 mg once daily, which have also shown significant 24-h relief of symptoms [2–3]. A shorter (1 week only) study comparing fexofenadine HCl 60 mg twice daily with loratadine 10 mg once daily supports the current findings and has also demonstrated a similar overall efficacy between the two treatments [13].

In the present study, both fexofenadine HCl and loratadine significantly reduced the mean 24-h reflective and instantaneous TSS scores from baseline compared with placebo. However, the improvement in itchy, watery, red eyes was significantly better with fexofenadine HCl than with loratadine. There was also a significant improvement in reflective nasal congestion symptoms with fexofenadine HCl compared with placebo or loratadine. Loratadine was not significantly different from placebo in this domain. Although this type of relief is not usually obtained with oral antihistamines [14–16], previous studies have also shown that fexofenadine HCl 120 mg once daily significantly reduces nasal congestion [2,3].

Fexofenadine HCl and loratadine were both well tolerated, with patients reporting a similar type and frequency of adverse events to those reported with placebo. These results concur with previous clinical studies where no difference in the incidence of adverse events was observed between fexofenadine HCl and placebo [2–3,17–18]. Following reports of rare cases of QTc interval prolongation with previous antihistamines [19], particular attention has been given to assessing cardiovascular parameters with these treatments. However, extensive investigation into the safety of fexofenadine HCl in clinical trials has shown no evidence for prolongation of QTc interval, or blocking of the  $I_{Kr}$ -related channel that has been associated with this effect, even at doses above therapeutic levels [20–22].

Improving patients' well-being or health-related quality of life is now recognized as an important goal in the management of patients with SAR [23]. In the current study, the improvement in RQLQ scores in the patients

**Table 2.** Mean change from baseline (visit 2) to visit 4 for the individual and overall quality of life scores ( $n = 509$ ). Data are presented as changes in observed means. Overall scores are presented as changes in least squares mean  $\pm$  standard error from ANCOVA

**Table 3.** Proportion of patients experiencing clinically meaningful changes in their quality of life while on fexofenadine [12]

| Treatment comparison           | Proportion better on fexofenadine* | Proportion showing no change on fexofenadine | Proportion worse on fexofenadine* | Proportion benefiting on fexofenadine | Number needed to treat |
|--------------------------------|------------------------------------|----------------------------------------------|-----------------------------------|---------------------------------------|------------------------|
| Fexofenadine HCl vs placebo    | 0.31                               | 0.52                                         | 0.17                              | 0.14                                  | 7.2                    |
| Fexofenadine HCl vs loratadine | 0.29                               | 0.53                                         | 0.17                              | 0.12                                  | 8.4                    |

\*Better or worse relative to a change in score  $\geq 0.5$  (i.e. MID for the RQLQ).

taking fexofenadine HCl was significantly greater than that observed in either the loratadine or placebo groups. However, the difference in scores between fexofenadine HCl and loratadine and between fexofenadine HCl and placebo were 0.25 and 0.32, respectively. Previous studies have shown that the smallest difference that can be considered clinically important and would justify a change in the patient's management is 0.5 (i.e. the MID) on the seven-point scale of the RQLQ [12]. However, using the MID to interpret the data is not as straightforward as it may appear. In the past, we would have rejected the values obtained in the current study as clinically unimportant, but this would have been an erroneous interpretation. Patients are very heterogeneous in the way in which they respond to medications and there are certainly patients in each treatment group who experienced a clinically meaningful improvement in their SAR-related quality of life over the treatment period. Comparing the mean difference in the treatment groups with the MID therefore does not consider the variation between the individual results.

To interpret the data, we have therefore expressed the proportion of patients benefiting from each intervention (i.e. change in score  $> 0.5$ ) and then calculated the NNT. This is the number of patients who need to be treated with an intervention for one patient to have a clinically meaningful

improvement in their SAR-related quality of life over and above that which s/he would have experienced on the other intervention(s). As Table 3 shows, 8.4 patients need to be treated with fexofenadine HCl in this study for one to have a clinically important improvement in quality of life compared with loratadine. Similarly 7.2 patients need to be treated with fexofenadine HCl for one patient to benefit over placebo. To many clinicians, these values for NNT may seem high, but they are in fact low and very consistent with therapeutically beneficial studies in asthma [24] and very low compared with the triple digit NNTs that are used to advocate the use of statins for reducing the risk of mild stroke [25]. The single digit NNT values seen with fexofenadine HCl when compared with both placebo and loratadine, support the clinical relevance of this drug for improving patients' quality of life. The finding in this study therefore supports those from previous quality of life studies in SAR, which have shown that improvement in quality of life scores with fexofenadine HCl are associated with improvements in clinically relevant assessments, such as the Patient Global Satisfaction Score [26–29].

There was no statistical difference in overall RQLQ scores between the loratadine and placebo groups. A previous study has also shown no significant difference in the mean RQLQ scores between loratadine and placebo [30].

**Table 4.** Summary of the number of patients with the most frequently reported adverse events (i.e.  $\geq 6$ ) for fexofenadine HCl 120 mg, loratadine 10 mg and placebo, administered once daily ( $n = 685$ )

|                    | Fexofenadine HCl<br><i>n</i> (%) | Loratadine<br><i>n</i> (%) | Placebo<br><i>n</i> (%) | Total patients<br><i>n</i> (%) |
|--------------------|----------------------------------|----------------------------|-------------------------|--------------------------------|
| All adverse events | 39 (16.8)                        | 40 (17.5)                  | 33 (14.7)               | 112 (16.4)                     |
| Headache           | 7 (3.0)                          | 6 (2.6)                    | 5 (2.2)                 | 18 (2.6)                       |
| Somnolence         | 4 (1.7)                          | 5 (2.2)                    | 3 (1.3)                 | 12 (1.8)                       |
| Asthenia           | 1 (0.4)                          | 4 (1.8)                    | 1 (0.4)                 | 6 (0.9)                        |
| Diarrhea           | 4 (1.7)                          | 2 (0.9)                    | 0 (0.0)                 | 6 (0.9)                        |
| Nausea             | 1 (0.4)                          | 2 (0.9)                    | 3 (1.3)                 | 6 (0.9)                        |
| Pharyngitis        | 3 (1.3)                          | 2 (0.9)                    | 1 (0.4)                 | 6 (0.9)                        |

In conclusion, the present study demonstrates that both fexofenadine HCl 120 mg and loratadine 10 mg administered once daily are effective and well tolerated in the treatment of SAR, but fexofenadine HCl is significantly more effective than loratadine at relieving eye symptoms and nasal congestion. Furthermore, fexofenadine HCl 120 mg once daily is significantly better than loratadine 10 mg once daily in improving the quality of life of patients who suffer from SAR. This difference between the two treatments is of a magnitude that is considered to be clinically relevant.

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