

Effectiveness of MP29-02 for the treatment of allergic rhinitis in real-life: Results from a noninterventional study

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ABSTRACT

The efficacy of MP29-02 (a novel intranasal formulation of azelastine hydrochloride and fluticasone propionate in an advanced delivery system) has been well established in controlled clinical trials. This study was designed to assess the use of MP29-02 and its effectiveness in routine clinical practice. This was a German multicenter, prospective, noninterventional study, including 1781 allergic rhinitis (AR) patients. Eligible patients (i.e., acute AR symptoms and visual analog scale [VAS] score >50 mm) were included, assigned MP29-02 at baseline, and reassessed after ~14 days. Patients assessed symptom control using a VAS from 0 (not at all bothersome) to 100 mm (very bothersome) in the morning before MP29-02 use, on days 0, 1, 3, and 7 and after ~14 days. Patients' perceived levels of disease control were assessed on day 3. The Youden index determined patient-reported VAS score cutoffs on day 3 for "well controlled" and "partly controlled." MP29-02 reduced the VAS score from 75.4 mm (SD = 17.2) at baseline to 21.3 mm (SD = 18.3) by the last visit, a shift of 54.1 mm (SD = 24.6). One in every two patients felt their symptoms were well controlled at day 3. This perception of well-controlled symptoms at day 3 corresponded to an optimal VAS cutoff of 36 mm. On average, patients treated with MP29-02 crossed this well-controlled VAS cutoff by last visit. Similar results were found in adolescents, adults, and older adults, in those with perennial AR (PAR), seasonal AR (SAR), or PAR + SAR and in those with more and less severe disease. MP29-02 provides effective and rapid symptom control across all age groups in a real-life setting with responder rates higher than those observed in controlled clinical trials, supporting MP29-02's position as the drug of choice for the treatment for AR.

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The burden of allergic rhinitis (AR) is now being recognized.¹ The overall aim of treatment is to achieve symptom control. Guidelines attempt to facilitate that aim.^{2–4} However, current therapy provides insufficient symptom control for many patients.^{5,6} An efficacy ceiling, or plateau, has recently been identified for intranasal glucocorticosteroid (INS),⁷ which may explain why treatment dissatisfaction levels are so high

among AR patients.⁸ Patients commonly comedicate (usually with an INS and an oral H₁-antihistamine),^{5,9,10} a practice that is rising,¹¹ but is not recommended by guidelines, such as ARIA (Allergic Rhinitis and Its Impact on Asthma),^{2,3} or by patient experience in real life.^{5,6}

A more effective AR management approach is therefore needed. Currently, there are gaps in the guidelines (and the evidence on which they are based) that impede their function.^{2–4,12} First, there is concern that undue weight is given to the evidence provided by randomized controlled trials (RCTs) and questions about the clinical relevance of regulatory-driven end points to assess drug efficacy. These trials test efficacy under conditions defined as ideal. Their results are not generalizable to the AR population at large,¹³ and they are primarily designed for regulatory purposes using end points that are frequently not patient relevant. Second, to date, the guidelines do not draw on evidence from real-life studies. These have been historically ignored because of quality issues, but that is slowly changing. Finally, the guidelines focus on severity and symptom longevity to guide treatment decisions, rather than on disease control. Moreover, it is not known whether older adults benefit from treatment similarly to adults.

The concept of disease control is well defined in asthma, but not so for AR. Broadly speaking, control

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may be defined as the degree to which therapy goals are met, but for rhinitis this is assessed in many different ways.¹⁴ What is missing in AR RCTs and real-life studies is a common communication platform for both patients and physicians. A simple visual analog scale (VAS) has recently been proposed by MACVIA-LR (Contre les MALadies Chroniques pour un Vieillissement Actif-Languedoc Rousillon) ARIA as the control language of AR and will form the basis for the new AR guidelines as part of an integrated care pathway (ICP).¹⁵ The VAS is well accepted by physicians,¹⁴ incorporates both symptoms and quality of life,¹⁶ correlates well with recognized RCT end points,¹⁷ can discriminate according to severity,¹⁸ and assess efficacy of treatments.^{17,19} The fact that the VAS is simple, quick, and intuitive to use and readily applicable to different clinical presentations makes it ideally suited to real-life research.

The aim of this real-life study was to assess the use of a new AR therapy, MP29-02, and its effectiveness in routine clinical practice using the new language of control, the VAS. In the study, age groups were differentiated and a large number of older adults were studied (>65 years). MP29-02 comprises azelastine hydrochloride and fluticasone propionate in a novel and patented formulation delivered in a single device with a wider spray angle and a consistent spray release. MP29-02 was administered as proposed in the package insert for the relief of symptoms of moderate/severe seasonal AR (SAR) and perennial AR (PAR) if monotherapy with either intranasal antihistamine or glucocorticoid is not considered sufficient.²⁰

METHODS

Study Design

This was a German, multicenter, prospective, noninterventive study. It consisted of an inclusion visit (V1), when eligible patients were assigned MP29-02 (1 spray/nostril twice per day) and a follow-up visit (V2) after ~14 days (allowing some flexibility depending on usual clinical practice). The study described the effectiveness of MP29-02 in SAR and PAR, in rhinitis defined according to ARIA, in different age groups (adolescents, adults, and older patients) and assessed whether effectiveness was dependent on baseline severity.

The study was performed in accordance with current laws and guidelines (*i.e.*, German drug law and German recommendations for conducting noninterventive study).^{21,22} Ethics approval was obtained from an independent investigational review board (*i.e.*, Ethics Committee of the State Chamber of Physicians of Baden-Württemberg). All patients provided written informed consent before entering the study.

Settings and Physicians

The study was performed by practicing physicians in Germany between April 2013 and March 2014. These physicians were those usually involved in the management of AR, including general practitioners; allergists; ear, nose, and throat specialists; pulmonologists; dermatologists; and pediatricians. Physicians decided to include a patient into the study independently from, and after the decision to prescribe MP29-02. Patients were initially prescribed MP29-02 during a routine visit to their physician. They were subsequently treated with MP29-02 and assessed the effectiveness in their own home/environment. The patients revisited their physician ~2 weeks later, in line with routine care.

Patients

Patients with moderate/severe SAR or PAR for whom monotherapy with either intranasal H₁-antihistamines or INS had been considered insufficient were included.²⁰ SAR patients were defined as those with a documented allergy to at least one pollen allergen (*i.e.*, spring, summer, and/or autumn pollen) but no non-pollen allergens. PAR patients were those with a documented allergy to at least one nonpollen allergen (*i.e.*, dust mites, animal dander, and/or mold) but no pollen allergens. Patients with both SAR + PAR had a documented allergy to at least one pollen allergen and at least one nonpollen allergen. Patients were also required to be aged ≥12 years, have acute AR symptoms on the day of inclusion (*i.e.*, VAS score of >50 mm), and provide written informed consent.

Patients were excluded from the study if they had a known allergic reaction to MP29-02 or any of its ingredients or, in the case of female patients, if they were pregnant or breast-feeding.

Concomitant use of MP29-02 with ritonavir is contraindicated, but apart from that there were no restrictions regarding concomitant treatments during the study.

MP29-02 Use in Routine Clinical Practice

Patient demographics, symptoms, and previous AR treatment use in the last year were recorded on V1. Physicians identified their reason for prescribing MP29-02 (*i.e.*, “alternative therapy was not sufficient in the past,” “alternative therapy was not considered sufficient to treat acute symptoms,” or “other”) and stratified patients as having SAR, PAR, or both (based on sensitizing allergens). Information on AR history, number of previous visits because of AR in the current calendar year, type of symptoms experienced (*e.g.*, predominant symptom and presence of ocular symptoms), and ARIA-defined AR severity were also captured. All data were recorded by physicians in an

electronic case report form (eCRF; Trium Analysis Online GmbH) in the national language (*i.e.*, German).

Effectiveness Assessment

Patients evaluated their AR symptom severity on a simple 100-mm VAS, in response to the statement, "please reflect on how bothersome your symptoms were within the previous 24 hours." Patients marked their response on the VAS from "0" (not at all bothersome) to "100" (very bothersome). This VAS assessment was performed in the morning, before MP29-02 use, on days 0, 1, 3, and 7 and at last visit (*i.e.*, after ~14 days). On day 3 patients also recorded their perceived level of AR control as either "well controlled," "partly controlled," or "uncontrolled," in response to the question, "how well controlled were your allergy symptoms within the previous 24 hours?" All effectiveness assessment information was recorded by patients on patient cards that were handed back to physicians during V2, or sent by mail. On receipt, physicians transcribed this information into the eCRF. Data were electronically signed by the physicians and saved in the study database located at Trium Analysis Online GmbH.

Safety

All suspected adverse drug reactions (ADRs) and special situations were documented in the eCRF. An ADR was defined as an adverse event (AE) with a reasonable possibility that the event may have been caused by MP29-02. A special situation was recorded in the event of pregnancy, breast-feeding, any overdose, abuse, off-label use, misuse, or medication error, an adverse reaction related to occupational exposure or lack of efficacy.

Statistics

All analyses were based on the safety population. This was defined as all patients who had been treated with MP29-02. Patients were excluded from the analysis if the electronic signature of the physician, confirming the correctness of the data entered in the eCRF, was missing at database lock.

All categorical data (*i.e.*, gender, rhinitis type, severity, symptomatology, previous AR treatment, reason for prescribing MP29-02, and patient perceived level of AR control) were described as number and percentage of patients. All continuous data were described as mean (SD). These analyses were performed by a Clinical Research Organization (Syneed Medidata GmbH) using the SAS (Version 9.1.3; SAS Institute Inc, Cary, NC) statistical software package.

Mean VAS score (SD) on days 0, 3, and 7 and the last visit were described for the whole population and according to phenotype (*i.e.*, SAR, PAR, or SAR +

PAR), age (*i.e.*, 12–17 years, 18–65 years, and >65 years), and severity (*i.e.*, less severe, mean baseline VAS score of 50–74 mm; more severe, mean baseline VAS score >75 mm). Maximization of the Youden index was used to determine two patient-reported VAS score cutoffs on day 3: a well-controlled VAS score cutoff and a partly controlled VAS score cutoff. Receiver operating characteristics curves were plotted and sensitivity, specificity, and the sum of both (*i.e.*, Youden index) were presented. Patient-perceived AR control on day 3 was described for the total population and according to phenotype.

Post hoc Analyses

Response was defined as percent of patients who achieved VAS scores of ≤ 36 and ≤ 54 mm and as percent of patients who achieved a ≥ 23 mm change from baseline in VAS score on days 0, 1, 3, and 7 and on the last visit. The optimal VAS cutoff scores of ≤ 36 and ≤ 54 mm were so defined by maximizing the Youden index (*i.e.*, highest sum of sensitivity and specificity) and refer to patient-perceived VAS cutoffs for (i) well-controlled and (ii) partly-controlled AR, respectively. A ≥ 23 -mm change from baseline has previously been defined as a clinically meaningful improvement.²³

Safety

AEs were coded using the MedDRA coding system (Version 16.1; MedDRA MSSO, McLean, VA) and described as number and percent of patients. All documented AEs and special situations were processed by Meda's Drug Safety Department.

RESULTS

Patient Disposition and Demographics

In all, 223 German physicians participated and enrolled 1849 patients into this study (Table 1). A total of 68 patients were excluded from the data analysis because of unconfirmed data documentation (*i.e.*, electronic signature of treating physician was missing) or no safety entries recorded. The remaining 1781 patients were included in the safety population.

The mean age of patients was 40.1 (SD = 16.6) years, with a slight preponderance of female patients. There were 113 patients aged 12–17 years old, 1516 patients aged 18–65 years old, and 149 patients aged >65 years old. The average duration of AR was just <10 years, with most patients having SAR ($n = 910$) or SAR + PAR ($n = 602$). Patients had moderate/severe disease, defined according to the ARIA severity classification system. Nasal congestion and rhinorrhea were the most commonly reported predominant symptoms. Over one-half of patients reported concomitant ocular symptoms.

Table 1 Patient demographic and baseline characteristics (*n* = 1781)

Descriptor	<i>n</i> (%)
Gender	
Female	995 (55.9)
Age, yr	
<12	3 (0.2)
12–17	113 (6.3)
18–65	1516 (85.1)
>65	149 (8.4)
Duration of rhinitis,* yr (mean [SD])	9.6 (8.5)
Type of rhinitis	
SAR	910 (51.1)
PAR	179 (10.1)
SAR + PAR	602 (33.8)
Unknown origin	90 (5.1)
Severity of AR	
Troublesome symptoms	1282 (72.0)
Impairment of daily activities/leisure/sport	1253 (70.4)
Impairment of school/work	909 (51.0)
Sleep disturbance	854 (48.0)
Predominant symptoms	
Nasal congestion	835 (46.9)
Rhinorrhea	538 (30.2)
Sneezing	260 (14.6)
Nasal pruritus	132 (7.4)
Unknown	16 (0.9)
Concomitant ocular symptoms	976 (54.8)

**n* = 1379.

SAR = seasonal allergic rhinitis; PAR = perennial allergic rhinitis; AR = allergic rhinitis.

Patients had attended their physician on average 2.6 times (SD = 2.4) in the current calendar year because of AR (before MP29-02 prescription); 20.3% (*n* = 362) of patients had attended once, 24.4% (*n* = 435) had attended twice, 17.1% (*n* = 304) had attended three times, and 9.3% (*n* = 166) had attended their doctor four times. A total of 13.2% of patients (*n* = 235) had attended their doctor five or more times in the current calendar year because of their AR. The reason for the doctor visit was acute AR symptoms in most cases (*n* = 1569; 88.1%), followed by expectation of allergen exposure in the near future (*n* = 206; 11.6%). The most frequent reason for prescribing MP29-02 was that alternative therapies were not sufficient in the past (*n* = 1182; 66.4%) or that alternative therapies were not considered sufficient to treat acute symptoms (*n* = 614; 34.5%).

Previous AR Treatments in the Last Year

The most common AR medications used by patients were oral H₁-antihistamines (*n* = 1194; 67.0%), intra-

Table 2 Previous AR treatment in the past year (*n* = 1781)

	<i>n</i> (%)
AR treatment	
Oral antihistamine	1194 (67.0)
Intranasal antihistamine	707 (39.7)
Intranasal corticosteroid	675 (37.9)
Ocular antihistamine	336 (18.9)
Systemic corticosteroid	219 (12.3)
Intranasal decongestant	182 (10.2)
Oral LTRA	82 (4.6)
Intranasal mast cell stabilizer	66 (3.7)
Ocular mast cell stabilizer	53 (3.0)
Oral decongestant	52 (2.9)
Other	178 (10.0)
None	86 (4.8)
Unknown	68 (3.8)
Immunotherapy (in past or currently ongoing)	576 (32.4)
Multiplicity	
No. of treatments	
1	613 (34.4)
2	568 (31.9)
3	374 (21.0)
4	144 (8.1)
5	56 (3.1)
6	16 (0.9)
7	5 (0.3)
8	5 (0.3)

AR = allergic rhinitis; LTRA = leukotriene receptor antagonist.

nasal antihistamines (*n* = 707; 39.7%), and INS (*n* = 675; 37.9%; Table 2). Eye drops (either antihistamine or mast-cell stabilizers) were used by 21.9% of patients (*n* = 389) and decongestants (either intranasal or oral) by 13.1% of patients (*n* = 234). Two-thirds of patients (*n* = 1168; 65.6%) had received multiple AR therapies in the last year, and 20.0% of patients (*n* = 356) had either received immunotherapy in the past or were currently receiving immunotherapy (*n* = 220; 12.4%).

Effectiveness

The mean time period between the start of treatment and the VAS assessment on the last visit (or on the day patients returned their card) was 15.2 (SD = 8.7) days (median, 14 days; Q1, 11 days; Q3, 15 days). The symptom burden was high at baseline with a mean reported VAS score of 75.4 mm (SD = 17.2). MP29-02 provided effective and rapid symptom reduction from baseline, with an average VAS score of 21.3 mm (SD = 18.3 mm) by last visit, a reduction of 54.1 mm (SD = 24.6 mm; Fig. 1 A). Results were consistent regardless of severity,

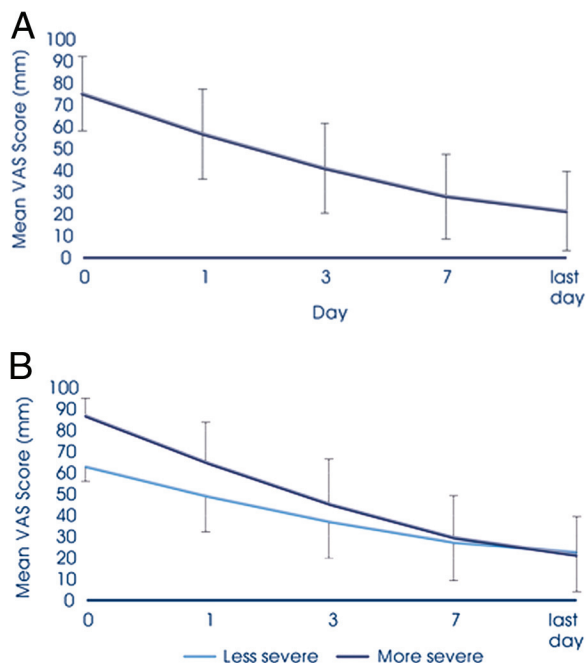


Figure 1. Effect of MP29-02 on visual analog scale (VAS) score over time in (A) the total population ($n = 1781$) and (B) according to baseline severity. Less severe, baseline VAS score of 50–74 mm ($n = 641$); more severe, baseline VAS score of 75–100 mm ($n = 996$). Data are presented as mean and SD.

with a rapid and effective symptom reduction observed in those with more severe disease and those with less severe disease (Fig. 1 B). One in every two of all patients (55.6%; $n = 991$) felt their symptoms were well controlled at day 3, with an additional 38.7% ($n = 690$) reporting that their symptoms felt partly controlled during the same time frame. Only 4% ($n = 72$) of patients reported uncontrolled symptoms at this time. Rapid and sustained symptom control was also observed for those patients irrespective of age (*i.e.*, 12–17 years, 18–65 years, and >65 years) or phenotype (*i.e.*, SAR, PAR, and both SAR + PAR; Fig. 2). Furthermore, one in every two SAR, PAR, or SAR + PAR patients reported the feeling of well-controlled symptoms after 3 days of treatment with MP29-02 (Fig. 3).

Response

The perception of well-controlled symptoms at day 3 corresponded to a VAS score cutoff of 36 mm (sensitivity, 0.599; specificity, 0.846; Youden index, 0.444). On average, patients treated with MP29-02 crossed this well-controlled VAS score cutoff by last visit. Similarly, the feeling of partly controlled symptoms at day 3 corresponded to a VAS score cutoff of 54 mm (sensitivity, 0.758; specificity, 0.870; Youden Index, 0.628). Over 90% of patients treated with MP29-02 achieved this level of control and rapidly (within 1 week). Patients treated with MP29-02 also achieved a rapid clin-

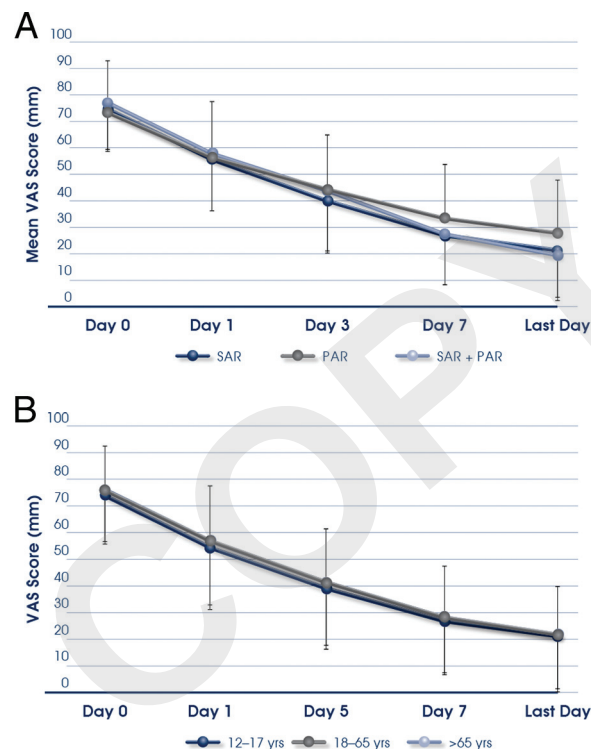


Figure 2. Effect of MP29-02 on visual analog scale (VAS) score over time according to (A) allergic rhinitis (AR) phenotype (*i.e.*, seasonal AR [SAR], perennial AR [PAR], SAR + PAR) and (B) age (*i.e.*, 12–17 years, 18–65 years, and >65 years). Data are presented as mean and SD.

ically relevant response (*i.e.*, a ≥ 23 -mm change from baseline in VAS score); with ~ 1 in 3 patients achieving a clinically relevant symptom reduction at day 1, nearly 2 of 3 patients by day 3, and 8 of 10 patients after 1 week of treatment with MP29-02.

Safety

During the course of this study 19 patients (1.1%) reported a total of 33 safety cases ($n = 21$ AEs and $n = 12$ special situations). A causal relationship to treatment with MP29-02 was assumed by the reporting physicians for 20 AEs, with the most frequent ADRs being dysgeusia ($n = 2$), nasal discomfort ($n = 2$), nausea ($n = 2$), rhinorrhea ($n = 2$), and sneezing ($n = 2$). No AE or ADR was considered serious. Six of the 1781 patients discontinued treatment with MP29-02 because of an AE, for reasons including dysgeusia ($n = 1$), nasal dryness ($n = 1$), nausea ($n = 2$), migraine ($n = 1$), nasal discomfort ($n = 2$), visual impairment ($n = 1$) eye burning ($n = 1$), rhinorrhea ($n = 2$), sneezing ($n = 2$) application site pain ($n = 1$), and rhinitis ($n = 1$).

DISCUSSION

This is the first study to assess the use, effectiveness, and safety of MP29-02 in routine clinical practice and is the first to describe patient-reported VAS score cutoff

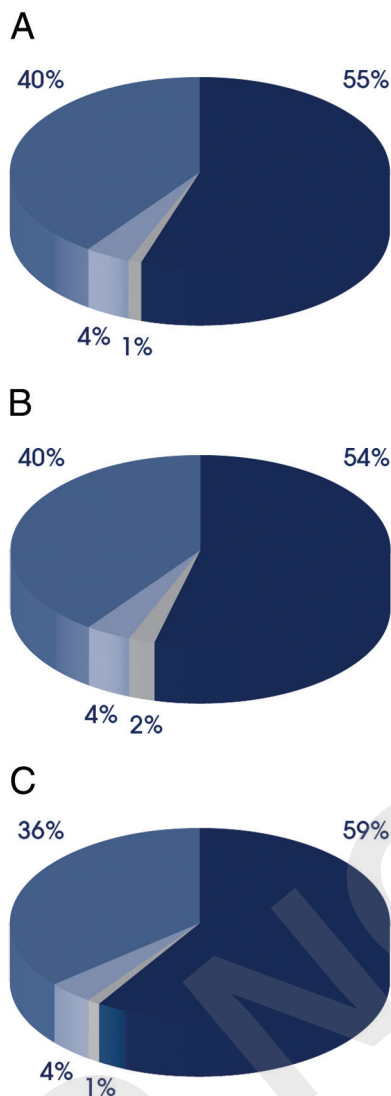


Figure 3. Patient perception of disease control on day 3 according to allergic rhinitis (AR) phenotype. Seasonal AR (SAR; $n = 910$); perennial AR (PAR; $n = 179$); SAR + PAR ($n = 602$). Dark blue, well-controlled; blue, partly-controlled; pale blue, uncontrolled; grey, unknown.

values for well-controlled (*i.e.*, ≤ 36 mm) and partly controlled AR symptoms (*i.e.*, $\text{VAS} \leq 54$ mm). MP29-02 rapidly reduced patients' AR symptoms from the 1st day of treatment, an effect that was sustained for the study duration of ~ 14 days. One in 2 patients reported the feeling of well-controlled symptoms after only 3 days of treatment. On average, patients achieved symptom control by the last visit, with a mean reported VAS score of 21.3 mm. The effect was consistent regardless of phenotype, severity, or age, and MP29-02 was well tolerated. These results are important because patients want complete and fast relief.²⁴ In fact, as many as 70.5% of moderate/severe SAR patients in the United Kingdom use multiple therapies in an effort to achieve this complete and fast symptom relief,⁵ even

though there is no scientific evidence to support that practice.^{25,26}

Data collected during this study also serve to highlight the suboptimal symptom relief afforded by the most frequently prescribed medications (*i.e.*, antihistamines and INS) even if used together and the need for a more effective treatment option. The inadequacy of currently considered first-line AR treatments was apparent not only by the high physician consultation rate and by the frequency of comedication use, but also by patients' high VAS scores at baseline. Patients who were prescribed MP29-02 in this study had uncontrolled disease, as evidenced by a baseline VAS score of 75.4 mm on average, despite the fact that almost all patients were treated (with two of three patients reporting multiple therapy use) and had visited their general practitioner several times in the past year (five or more times for some patients). Multiple physician visits indicate dissatisfaction with current therapy, and, indeed, MP29-02 was most commonly prescribed because of insufficiency of alternative therapies in the past. Multiple physician visits have been shown to inflate the costs associated with the management of AR and, in conjunction with absenteeism and presenteeism, account for the high indirect costs.²⁷ MP29-02 provided fast and effective symptom control in these patients who have previously been uncontrolled, which might provide an opportunity for cost reduction caused by unnecessary doctor visits and coprescriptions.

Others have assessed the effectiveness of AR treatments in real life.^{28–31} However, in general, these did not permit meaningful conclusions to be drawn and hence were not considered for inclusion in AR guidelines. Some of the limitations include low patient numbers in many instances, insufficient information on patient recruitment, and bias minimization as well as inclusion of "soft" efficacy measures such as patient satisfaction and global assessment of efficacy. Rather than using a simple VAS to assess effectiveness, these studies^{28–31} used quite complicated measures, such as total symptom scores and peak nasal inspiratory flow assessments, which are both time-consuming to record and are not used in routine clinical practice. Total symptom scores used in these studies incorporated different combinations of symptoms, making cross-study comparisons difficult. Furthermore, these studies have not included or assessed clinically relevant parameters (*e.g.*, symptom control).

The present multicenter prospective, noninterventional study is different and did not suffer from these limitations. The sample size of 1781 patients was considered sufficiently large to draw general conclusions on use, effectiveness, and safety of MP29-02 in routine clinical practice. Bias due to incomplete data was also minimal (1–5%) and at the lower range expected in

observational studies. In contrast to many real-life studies in AR, the present study used a VAS score to assess effectiveness, the same score that will be used by the new ARIA guidelines to assess disease control and guide AR treatment, called the ICP for airway diseases.¹⁵

Limitations associated with a noninterventional design were present, such as lack of a comparator or placebo arm and lack of blinding. Although in an RCT design these limitations would have been removed by maximizing internal validity (*i.e.*, testing an intervention under ideal circumstances), it would do so at the expense of external validity (*i.e.*, generalizability). The controlled nature of RCTs, with strict inclusion and exclusion criteria for entry, mean that patients included in them are often not representative of the general population.¹³

Real-life studies are important because they determine the effects of treatment under the usual conditions of care. They include a broad patient population (often those actively excluded from RCTs) and a free ecology of care, thus maximizing applicability of findings to everyday practice. The effectiveness of MP29-02 observed in this real-world setting was better than its efficacy assessed in RCTs.^{7,32} The MP29-02 RCTs endeavored to overcome some of the limitations of RCTs by using responder analyses to assess efficacy in a more clinically relevant way (as suggested by European Medicines Agency).³³ They defined “substantial response” and “complete/near-to-complete response” and showed that MP29-02 provided complete/near complete symptom control in 1 of 6 moderate/severe SAR patients⁷ and complete relief in 7 of 10 mild-to-moderate PAR patients³² and achieved these responses days faster than an INS.^{7,32} Results from the present study showed that in real life, patients treated with MP29-02 experienced a rapid clinically relevant change (*i.e.*, ≥ 23 -mm change from baseline in VAS score),²³ with many patients experiencing clinically relevant symptom relief in the first few days of treatment. The average VAS score change from baseline was 54.1 mm (SD = 24.6 mm) by the last visit. One in every two patients treated with MP29-02 felt well controlled after just 3 days of treatment. By last visit the average VAS score for patients was well below the patient-defined well-controlled VAS score cutoff of 36 mm. This rapid and complete response is what AR patients want.²⁴ The discrepancy between the results from the different study designs highlights the importance of real-life studies in obtaining information about the effectiveness of the treatment and the importance of using patient-defined cutoffs of disease control rather than arbitrary response cutoffs identified in RCTs.

Symptom control is clearly becoming the key descriptor of the AR disease process, rather than symptom longevity and severity. Disease assessment and

treatment decisions will, in the future, be based on control, which in turn will be assessed by the VAS as part of an airway ICP.¹⁵ The simplicity and ease of use of the VAS lends itself very well to the digital world. It will be an integral component of a soon-to-be released app by MACVIA-LV ARIA and the European Union, called Allergy Diary, designed to assess and track symptom control and direct patients to their health care provider when appropriate.³⁴ The app defines VAS cutoffs for well-controlled (*i.e.*, VAS score, ≤ 20 mm), partly controlled (*i.e.*, VAS score, 20–50 mm), and uncontrolled AR (*i.e.*, VAS score, >50 mm) based on large studies performed in asthma³⁵ and AR.³⁶ As the app becomes used it is likely that these values may evolve as patients use it and provide feedback. A simple digitized VAS will also be made available to pharmacists and physicians, thus closing the communication loop and ensuring that all stakeholders are speaking the same language of AR control. Together these new tools will encourage simplification of and compliance with AR management guidelines, ensure open and effective communication between all interested parties, and facilitate a tailoring of AR medication to patients' needs.

In conclusion, in this real-life study MP29-02 provided effective and rapid symptom control in AR patients who remained uncontrolled despite mono- and multiple-therapy and multiple doctor visits. The responder rates were higher than those observed in controlled clinical trials. Patients treated with MP29-02 quickly achieved AR symptom control, regardless of disease phenotype, severity, age, or VAS cutoff, supporting the position of MP29-02 as the drug of choice for the treatment of AR.

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