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ORIGINAL ARTICLE

Patient-reported most bothersome symptoms in OAB: post hoc analysis of data from a large, open-label trial of solifenacin

Peter K. Sand · William D. Steers · Roger Dmochowski · Masakazu Andoh · Sergio Forero-Schwanhaeuser

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Abstract
Introduction and hypothesis In overactive bladder (OAB), subjects' most bothersome symptom (MBS) may influence treatment-related outcomes. We evaluated effects of solifenacin on patient-reported outcomes (PROs) in subjects stratified by their MBS at baseline.
Methods In a 12-week, open-label study, the effects of solifenacin on PROs were assessed using visual analog scales (VAS), the OAB questionnaire (OAB-q), and the patient perception of bladder condition (PPBC). Statistics were descriptive.
Results Subjects' baseline MBS were frequency (27%), urge urinary incontinence (UUI; 26%), urgency (23%), and nocturia (15%); VAS scores were worse for MBS. By study end, participants' MBS showed the largest solifenacin-related VAS improvements. The UUI subgroup showed the largest VAS, OAB-q, and PPBC improvements.
Conclusions Solifenacin improved overall and symptom-specific bother, HRQL, and perception of their bladder condition in MBS subgroups, with larger improvements in subjects' MBS. Those with UUI as MBS showed greater improvement in most outcomes.

Keywords Most bothersome symptom · Overactive bladder · Solifenacin · Patient-reported outcomes

P. K. Sand (✉)
Division of Urogynecology,
Department of Obstetrics & Gynecology,
Evanston Continence Center,
NorthShore University HealthSystem,
Northwestern University, Feinberg School of Medicine,
Evanston, IL 60201, USA
e-mail: p-sand@northwestern.edu

W. D. Steers
Department of Urology,
University of Virginia School of Medicine,
Charlottesville, P. O. Box 800422, VA 22908, USA

R. Dmochowski
Department of Urologic Surgery and Vanderbilt Continence Center,
A-1302 Medical Center North,
Vanderbilt University Medical Center,
Nashville, TN 7232-2765, USA

M. Andoh
Astellas Pharma US Inc.,
Deerfield, IL, USA

S. Forero-Schwanhaeuser
GlaxoSmithKline,
King of Prussia, 2301 Renaissance Boulevard,
Bldg. 510 RN4256,
Pennsylvania, PA 19406, USA

Introduction

Overactive bladder (OAB) syndrome is a chronic and debilitating condition characterized by urinary urgency with or without urge urinary incontinence (UUI), usually with increased daytime urinary frequency and nocturia [1]. To diagnose OAB, urgency must be present in the absence of other underlying pathologic or metabolic issues. Based on this definition, OAB has a relatively high prevalence with estimates ranging from 11.8% in Canada and Europe based on the EPIC study [2] to 16.5% in the USA according to the NOBLE survey [3]. However, the number of sufferers seeking healthcare for the condition is only a fraction of this estimate. This suggests that some individuals may be more bothered by their symptoms than are others (assuming equal access to healthcare). Thus, it may be insightful to

investigate which symptoms are most bothersome and to what degree therapies improve these symptoms.

Muscarinic receptor antagonists are the mainstay of pharmacologic treatment for OAB. While antimuscarinics have been available for more than three decades, many of these agents caused characteristic antimuscarinic side effects (dry mouth, constipation, blurred vision) that made adherence with prolonged use challenging [4–6]. Compared with older agents, newer antimuscarinics may have an improved therapeutic index offering comparable efficacy but improved tolerability or reduced side effects [6]. In addition, newer antimuscarinic therapies (including solifenacin and darifenacin) offer flexible, once-daily dosing and are somewhat more selective for the M3 receptor. In clinical practice, these characteristics may translate into a more individualized approach to OAB treatment [6] and improved compliance with therapy [7].

At present, it is difficult to compare antimuscarinic therapies as there have been few head-to-head studies that clearly show superiority. The STAR trial was one comparative study that focused on the effects of solifenacin 5 or 10 mg/day flexibly dosed versus tolterodine extended release (ER) 4 mg/day on bladder diary-recorded OAB symptoms [8]. It also used a patient-reported outcome (PRO) measure, the patient perception of bladder condition (PPBC), which assessed the extent of subjects' bladder-related problems [9]. The STAR study found that solifenacin showed non-inferiority against tolterodine ER with respect to the primary endpoint, reductions in daytime urinary frequency. It also reported that urgency, UUI, and the PPBC were all significantly improved with solifenacin compared with tolterodine ER.

While it is important to compare the relative efficacy of different treatments using bladder diary-based variables, it is still unclear which PRO measures should be used to best determine clinical benefit. Few clinical trials have used the same tools to assess clinical efficacy in a subjective manner, making comparisons between antimuscarinics problematic. Although PRO measures cannot substitute for more objective measures, they provide valuable insight into the impact of changes in OAB symptoms on sufferers' lives [10]. One approach is to use tools that assess symptom bother, which is known to be important to the OAB sufferer. Recently, data from the IMPACT trial showed that tolterodine ER-related improvements in subjects' most bothersome symptom (MBS) were similar to those seen in OAB symptoms in the full study population regardless of symptom bother [11, 12]. Results from IMPACT also confirmed that the PRO data correlated, albeit moderately, with diary data [13]

To determine the efficacy of solifenacin to improve subjects' MBS based on PRO measures, we conducted a post hoc analysis of data from the VESIcare® Open-Label Trial (VOLT) [14]. This clinical trial evaluated PROs, safety, and tolerability of solifenacin in more than 2,000 subjects with OAB in a naturalistic setting. In this analysis, all PRO data were stratified according to the MBS identified by subjects at baseline. This is the first large-scale trial of OAB pharmacotherapy to evaluate symptom-specific bother as a function of baseline MBS and to examine overall symptom bother and HRQL associated with MBS.

Materials and methods

Study design and study population

Complete details regarding the VOLT study design and patient population have been previously described [14]. Briefly, VOLT was a 12-week, US-based, open-label, phase IIIb study that assessed the efficacy and tolerability of solifenacin (5 or 10 mg/day flexibly dosed) in adults with OAB symptoms for ≥3 months. Subjects could be treatment naive or have previously received OAB therapies other than solifenacin.

The definition of OAB symptoms used in VOLT conformed to the standards recommended by the International Continence Society (ICS) in 2002 [1], defined as urgency (a sudden compelling urge to pass urine that is difficult to defer), with or without UUI (a complaint of any involuntary leakage accompanied by or immediately preceded by urgency), usually with increased daytime urinary frequency (a subject's perception that they urinate too often during the day), and nocturia (having to wake one or more times to void per night). Subjects were included based on self-reported perception of urgency with or without other OAB symptoms and were not excluded if urgency was not reported by the investigator at baseline.

Efficacy and tolerability assessment

In this post hoc subanalysis, data were stratified based on the subjects' MBS at baseline. Subjects were asked to identify a single MBS from a list of OAB symptoms (urgency, UUI, daytime urinary frequency, and nocturia). Subjects were required to have their MBS and co-existing OAB symptoms confirmed by physician's assessment of history at baseline.

Efficacy of solifenacin on subjects' perceptions of their OAB symptoms was assessed using three PRO measures: a visual analog scale (VAS), the OAB questionnaire (OAB-q), and the PPBC. Although the PRO measures were administered at multiple time points, the data presented here focus on the change from baseline to study end (week 12).

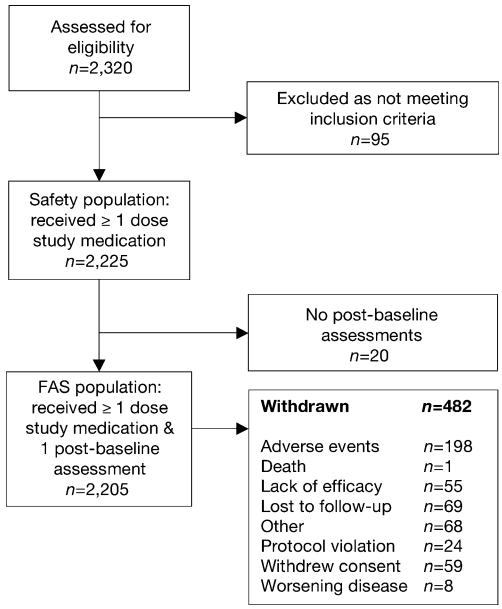

Fig. 1 VOLT study recruitment. *FAS* full analysis set

A 100-mm VAS assessed subjects' perception of OAB symptom-related bother. A separate VAS was completed for each symptom of urgency, UUI, daytime urinary frequency, and nocturia. Although the VAS has not been validated for all OAB symptoms, similar scales have been used in other OAB trials [15–17], and it has been validated in incontinence [18, 19]. Subjects were not prompted on specific definitions of these symptoms to allow their own subjective appraisal.

The 33-item, validated OAB-q is comprised of an eight-item Symptom Bother scale and a 25-item HRQL scale [20, 21]. On the Symptom Bother scale, patients rate the level of bother associated with their OAB symptoms during the past 4 weeks on a six-point scale, ranging from 1 ("not at all") to 6 ("a very great deal"). The HRQL scale comprises four domains: Coping, Concern, Sleep, and Social Interaction. For each domain, patients indicate the frequency with which their OAB symptoms affected different activities during the previous 4 weeks, with scores ranging from 1 ("none of the time") to 6 ("all of the time"). The minimally important difference, that is, the smallest numeric score change that patients would perceive as beneficial, for all of the OAB-q scales and domains has been reported to be ten points [22].

On the single-item, validated PPBC, subjects indicate which one of six statements best describes the extent of their bladder-related problems on a six-point scale ranging from 1 ("my bladder condition does not cause me any problems at all") to 6 ("my bladder condition causes me many severe problems") [9, 23].

Safety was assessed by recording and tracking adverse events (AEs), as well as through the recording of vital signs

Table 1 Baseline demographics in the full analysis set, grouped by MBS at baseline

	MBS			
	Urgency (*n*=499)	UUI (*n*=582)	Daytime urinary frequency (*n*=604)	Nocturia (*n*=332)
Age, (years)[a]	59.3	60.9	57.1	62.3
Age groups, *n* (%)				
<65	296 (59.3)	342 (58.8)	403 (66.7)	174 (52.4)
≥65	203 (40.7)	240 (41.2)	201 (33.3)	158 (47.6)
≥75	88 (17.6)	89 (15.3)	80 (13.3)	81 (24.4)
Gender, *n* (%)				
Male	88 (17.6)	46 (7.9)	134 (22.2)	90 (27.1)
Female	411 (82.4)	536 (92.1)	470 (77.8)	242 (72.9)
Ethnic group, *n* (%)				
White	413 (82.8)	493 (84.7)	441 (73.0)	270 (81.3)
Black	46 (9.2)	62 (10.7)	101 (16.7)	34 (10.2)
Other	40 (8.0)	27 (4.6)	62 (10.3)	28 (8.4)
Physicians' baseline assessment of OAB symptoms, *n* (%)				
Urgency	499 (100.0)	534 (91.8)	530 (87.8)	282 (84.9)
UUI	364 (72.9)	582 (100)	343 (56.8)	193 (58.1)
Daytime urinary frequency	435 (87.2)	488 (83.8)	604 (100.0)	295 (88.9)
Nocturia	374 (74.9)	438 (75.3)	504 (83.4)	332 (100.0)

MBS most bothersome symptom, *UUI* urge urinary incontinence

[a] Mean

Table 2 Mean scores (mm) on a visual analog scale (VAS) assessment of symptom severity and proportion of subjects with improved VAS score at study end; patients grouped by MBS at baseline

	MBS			
	Urgency	UUI	Daytime urinary frequency	Nocturia
VAS: urgency				
Subjects, *n*	416	493	472	250
Baseline score	72.6	72.3	65.1	63.1
Study end score	28.0	29.2	29.5	30.9
Change from baseline	**−44.5**	−43.1	−35.6	−32.2
95% CIs	**−47.4, −41.6**	−45.8, −40.4	−38.3, −32.9	−36.1, −28.3
Subjects with improved score, *n* (%)	**378 (90.9)**	447 (90.7)	414 (87.7)	205 (82.0)
VAS: UUI				
Subjects, *n*	365	497	357	184
Baseline score	58.9	78.5	52.5	57.8
Study end score	22.2	26.7	20.4	26.8
Change from baseline	−36.7	**−51.7**	−32.2	−31.0
95% CIs	−40.0, −33.4	**−54.5, −49.0**	−35.5, −28.8	−36.0, −26.0
Subjects with improved score, *n* (%)	324 (88.8)	**467 (94.0)**	313 (87.7)	154 (83.7)
VAS: daytime urinary frequency				
Subjects, *n*	402	457	495	258
Baseline score	68.8	65.7	78.4	66.9
Study end score	27.6	23.7	32.1	32.7
Change from baseline	−41.2	−42.0	**−46.3**	−34.2
95% CIs	−44.2, −38.1	−45.0, −39.0	**−49.1, −43.5**	−38.1, −30.3
Subjects with improved score, *n* (%)	358 (89.1)	406 (88.8)	**455 (91.9)**	212 (82.2)
VAS: Nocturia				
Subjects, *n*	371	440	448	269
Baseline score	59.2	57.9	66.3	82.6
Study end score	24.7	23.5	29.1	38.7
Change from baseline	−34.5	−34.4	−37.2	**−43.9**
95% CIs	−37.8, −31.2	−37.3, −31.5	−40.2, −34.3	**−47.9, −40.0**
Subjects with improved score, *n* (%)	321 (86.5)	381 (86.6)	392 (87.5)	**245 (91.1)**

Analyses include only subjects with complete data available, as noted by *n*.

Values in bold represent OAB symptoms with greatest mean change in VAS from baseline to study end in each subgroup.

$p<0.001$ for all changes from baseline

MBS most bothersome symptom, *UUI* urge urinary incontinence, *95% CI* 95% confidence interval

such as blood pressure and pulse, brief physical exams, and testing for urinary tract infection.

Statistical analysis

The efficacy analysis was performed in the full analysis set (FAS), which included all study participants who received ≥1 dose of study medication, had baseline data, and had ≥1 post-baseline assessment. All statistical analyses were descriptive. Mean change from baseline to study end in VAS, OAB-q, and PPBC scores are presented with the 95% confidence intervals (CI), and the corresponding *p* values are calculated based on a paired *t* test statistic. Any change of VAS and PPBC scores in the favorable direction is considered an improvement in the categorical summaries of subjects with an improved score.

Results

Study population

A total of 2,320 subjects were screened in the VOLT study, of which 2,225 were included in the safety population and 2,205 in the FAS population (Fig. 1). In the FAS, 1,821 (82.6%) had been previously treated and

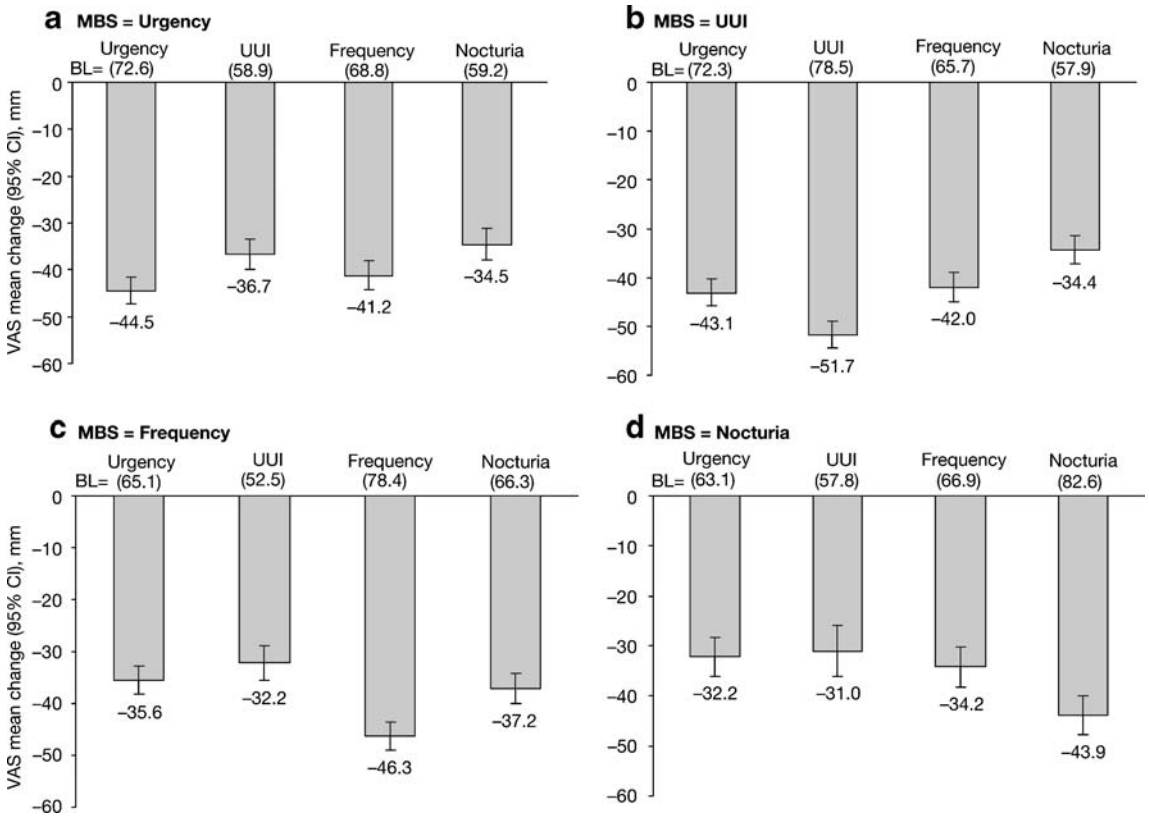

Fig. 2 Mean score change (mm) from baseline to study end on a visual analog scale (*VAS*) assessment of symptom bother. Baseline values for each VAS score shown at the *top of each bar*. $p<0.001$ for all changes from baseline. *MBS* most bothersome symptom, *BL* baseline, *UUI* urge urinary incontinence, *95% CI* 95% confidence interval

384 (17.4%) were treatment naive. A total of 604 (27.4%) subjects reported their MBS as daytime urinary frequency, 582 (26.4%) as UUI, 499 (22.6%) as urgency, and 332 (15.1%) as nocturia; a further 188 (8.5%) subjects did not specify a single MBS that was confirmed by physicians' assessment at baseline. The baseline demographics of the FAS population according to MBS subgroups are shown in Table 1. A greater percentage of subjects who reported nocturia as their MBS were male as opposed to those reporting daytime urinary frequency, urgency, or UUI. There was a greater percentage of black subjects in the daytime urinary frequency MBS subgroup compared with those in the UUI, nocturia, or urgency subgroups. Subjects aged ≥65 years made up a larger proportion of the nocturia subgroup versus the UUI, urgency, or daytime urinary frequency subgroups. Mean age of subjects whose MBS was nocturia was 62.3 years compared with 60.9 years for UUI, 59.3 years for urgency, or 57.1 years for daytime urinary frequency.

At week 4, about half of the patients chose to remain on solifenacin 5 mg and half chose an increase to 10 mg, regardless of MBS. At week 8, the vast majority of patients remained on the dose they had chosen at week 4 (~80% for 5 mg and ~90% for 10 mg).

Patient-reported outcomes

According to the VAS, subjects typically scored higher (worse) at baseline in the symptom category corresponding to their MBS than those who were not most bothered by that symptom (Table 2). At study end, VAS scores for all MBS subgroups were comparable, showing that solifenacin improved symptom bother, defined as VAS scores for each MBS subgroup, to a level experienced by those not as bothered by that symptom (Table 2). In addition, a large proportion of subjects in each MBS subgroup experienced improvements across all symptoms on the VAS, with the MBS in each subgroup corresponding to the symptom with the greatest number of subjects reporting improvement at study end (Table 2). Thus, the greatest mean changes in VAS numerically from baseline were consistently associated with subjects' MBS (Fig. 2). Of all MBS subgroups, UUI was the subgroup with the most improved mean VAS score in its MBS and had the largest majority of subjects with improved MBS; this was followed by MBS improvements in urgency, daytime urinary frequency, and nocturia.

Solifenacin also significantly improved symptom bother and HRQL from baseline to study end across all MBS subgroups, as assessed using the OAB-q (Table 3). Again,

Table 3 Mean scores on OAB-q subscales at baseline and study end; patients grouped by MBS at baseline

	MBS			
	Urgency	UUI	Daytime urinary frequency	Nocturia
OAB-q: symptom severity				
Subjects, *n*	458	538	545	296
Baseline score	56.6	63.1	53.0	54.8
Study end score	26.7	27.2	26.9	29.2
Change from baseline[a]	−29.9	−35.9	−26.1	−25.7
95% CIs	−32.1, −27.7	−38.0, −33.8	−28.0, −24.2	−28.3, −23.1
OAB-q: coping				
Subjects, *n*	456	533	539	288
Baseline score	54.9	48.9	51.3	59.5
Study end score	81.1	81.5	78.3	81.6
Change from baseline	26.1	32.5	27.0	22.1
95% CIs	23.8, 28.5	30.2, 34.8	24.9, 29.1	19.3, 24.9
OAB-q: concern				
Subjects, *n*	456	533	540	288
Baseline score	53.4	43.1	52.7	55.2
Study end score	81.2	80.1	80.0	80.4
Change from baseline	27.8	37.0	27.3	25.2
95% CIs	25.3, 30.2	34.6, 39.4	25.2, 29.4	22.2, 28.3
OAB-q: sleep				
Subjects, *n*	456	533	540	288
Baseline	55.0	55.2	48.0	31.1
Study end	79.3	81.2	74.8	66.2
Change from baseline	24.3	26.0	26.7	35.1
95% CIs	21.8, 26.8	23.7, 28.3	24.6, 28.9	31.9, 38.3
OAB-q: social interaction				
Subjects, *n*	456	532	539	288
Baseline score	78.1	73.6	75.5	78.5
Study end score	91.3	91.3	90.0	91.3
Change from baseline	13.2	17.7	14.5	12.8
95% CIs	11.2, 15.2	15.7, 19.7	12.7, 16.2	10.5, 15.2
OAB-q: HRQL				
Subjects, *n*	456	531	538	288
Baseline score	59.2	53.4	55.9	56.4
Study end score	82.8	83.0	80.4	80.1
Change from baseline	23.6	29.6	24.5	23.7
95% CIs	21.6, 25.7	27.6, 31.6	22.7, 26.3	21.2, 26.3

Analyses include only subjects with complete data available, as noted by *n*.

$p<0.001$ for all changes from baseline

HRQL health-related quality of life, *MBS* most bothersome symptom, *OAB-q* overactive bladder questionnaire, *UUI* urge urinary incontinence

[a] Decrease indicates improvement

the UUI subgroup showed the greatest improvements after solifenacin treatment across both the Symptom Bother and HRQL scales, and on all HRQL domains, except Sleep, for which the greatest improvements were seen in the nocturia subgroup.

On the PPBC, solifenacin significantly improved subjects' perception of their bladder problems across all MBS subgroups. The proportion of subjects with an improvement in PPBC score for each MBS subgroup were 75.1% for urgency, 80.4% for UUI, 68.3% for daytime urinary frequency, and 69.6% for nocturia. Mean (95% CI) score changes were −1.5 (−1.6 to −1.4) for urgency, −1.7 (−1.8 to −1.6) for UUI, −1.2 (−1.3 to −1.1) for daytime urinary frequency, and −1.3 (−1.5 to −1.2) for nocturia subgroups. Thus, the UUI subgroup had the greatest improvement in PPBC score, similar to the trends seen on the VAS and the OAB-q scores.

Safety and tolerability

Full details of the safety data from VOLT have been reported previously [14]. All-cause and treatment-related

Table 4 Common treatment-emergent adverse events in ≥2% of the safety population; patients grouped by MBS at baseline

Adverse event	MBS			
	Urgency (*n*=499)	UUI (*n*=582)	Daytime urinary frequency (*n*=604)	Nocturia (*n*=332)
Any AE, *n* (%)	308 (61.7)	357 (61.3)	351 (58.1)	202 (60.8)
Any treatment-related AE, *n* (%)	216 (43.3)	238 (40.9)	247 (40.9)	154 (46.4)
Withdrawals due to AE, *n* (%)	42 (8.4)	34 (5.8)	75 (12.4)	37 (11.1)
Gastrointestinal disorders, *n* (%)				
Dry mouth	112 (22.4)	104 (17.9)	130 (21.5)	92 (27.7)
Constipation	68 (13.6)	85 (14.6)	75 (12.4)	47 (14.2)
Nervous system disorders, *n* (%)				
Headache	16 (3.2)	21 (3.6)	16 (2.7)	15 (4.5)
Eye disorders, *n* (%)				
Blurred vision	13 (2.6)	20 (3.4)	16 (2.7)	7 (2.1)
Infections and infestation, *n* (%)				
Urinary tract infection	21 (4.2)	21 (3.6)	21 (3.5)	8 (2.4)
Upper respiratory tract infection	16 (3.2)	27 (4.6)	12 (2.0)	9 (2.7)

AE adverse event, *MBS* most bothersome symptom, *UUI* urge incontinence

AEs occurred with similar frequency during the treatment phase irrespective of baseline MBS (Table 4). In addition, similar numbers of subjects discontinued treatment in each MBS subgroup. Treatment-emergent AEs were typically anticholinergic in nature, including dry mouth, constipation, headache, or blurred vision.

Discussion

To date, VOLT is one of the largest clinical trials to examine the efficacy of OAB pharmacotherapy based on PRO measures. This post hoc analysis shows that solifenacin (5 or 10 mg/day flexibly dosed) improves subjects' symptom-specific bother, aspects of HRQL, and the extent of their bladder problems regardless of their MBS at baseline. Statistically significant improvements from baseline to study end were observed for all three PRO measures—the VAS, OAB-q, and PPBC. The greatest improvements in VAS were seen in the symptom category that subjects reported as their MBS, while the UUI subgroup showed the largest mean change for VAS as well as for the OAB-q and PPBC.

The improvements observed in this post hoc analysis parallel those reported for the primary analysis of VOLT data. For the FAS, relative (i.e., percentage) improvements on the VAS after solifenacin were 58% for urgency, 63% for UUI, 59% for daytime urinary frequency, and 57% for nocturia [14].

Likewise, the IMPACT study of tolterodine ER also found that PROs were improved in subjects stratified by their baseline MBS [11, 12], and these symptom improvements were similar to those observed in the IMPACT full study population (*n*=863) [11, 12]. Unlike the current study, IMPACT PRO data were not reported for each symptom within each MBS category. Thus, it is not clear from IMPACT whether subjects who received tolterodine ER showed improvements in their baseline MBS that differed from those not as bothered by that symptom.

In VOLT, the most commonly reported MBS were daytime urinary frequency (27.4%) and UUI (26.4%), followed by urgency (22.6%) and nocturia (15.1%). Thus, while the highest percentage of subjects rated daytime urinary frequency as their MBS, a similar proportion also rated UUI as their MBS. However, it should be noted that the prevalence of each MBS may be related to the overall prevalence of these symptoms in the VOLT study population (at baseline, 91% of all subjects in VOLT had urgency, 89% had daytime urinary frequency, 81% had nocturia, and 72% had UUI) [14]. Furthermore, the rate of each MBS in the full study population may not reflect the rate of MBS in subjects with each symptom. For example, although most subjects overall reported daytime urinary frequency as their MBS, when considering only those subjects with UUI at baseline, a large majority of these subjects reported UUI as their MBS (36.7%) rather than urgency (23.2%), daytime urinary frequency (22.3%), or nocturia (12.5%) [24].

These symptom rates are higher than some previous reports of the prevalence in the general population, such as those from the EPIC study, which estimated that nocturia was the OAB symptom most frequently reported among men (49%) and women (55%), followed by urgency (10.8% in men and 12.8% in women) [2].

The VOLT study design has some limitations that should be considered when interpreting these data. First, it was an open-label study; therefore, the effects of active treatment could not be compared with those of placebo. In addition, the VAS has not been validated for all OAB symptoms. That subjects showed the largest treatment-related improvements in their MBS relative to co-existing symptoms might be explained by a Hawthorne-like effect. That is, an increased focus on their MBS may have inflated their perceived improvements in that symptom relative to their other complaints. However, it has already been shown in previous placebo-controlled, phase III trials that solifenacin improves daily diary-based endpoints and the PRO measures, including those used in this study [25–27]. These pivotal trials have reported median percentage reductions in diary-based endpoints with solifenacin 5 mg/day versus placebo of −66% versus −40%, respectively, for urgency episodes, −100% versus −64% for UUI episodes, −19% versus −12% for daytime urinary frequency, and −36% versus −25% for nocturia episodes [28].

Second, VOLT was designed to assess the perception of symptomatic relief with solifenacin in a large population in a real-world clinical setting. As such, diary-based endpoints were not recorded, and formal correlations could not be calculated between the PRO and diary data. Despite this limitation, it is important to note that since OAB is a symptom-defined syndrome, symptomatic relief is the main therapeutic goal from the sufferer's perspective. The Institute of Medicine stresses the importance of healthcare that is "Patient-centered: providing care that is respectful of and responsive to individual patient preferences, needs, and values, and ensuring that patient values guide all clinical decisions." [29] There is also increasing evidence to support the use of subjective measures to complement objective assessments in both OAB evaluation and management [10]. A recent analysis of IMPACT in subjects stratified by baseline MBS has also reported that tolterodine ER-related changes in PROs showed a small but significant correlation with changes in diary variables [13].

Third, subjects were included in VOLT based on their perception of OAB symptoms (according to the ICS 2002 definitions). However, it should be noted that while all subjects had self-reported urgency with or without other OAB symptoms, a small proportion (9%) did not have their urgency confirmed by an investigator at baseline.

Finally, we did not assess how bothersome other somatic complaints were to the study population. Thus, since OAB sufferers have been shown in other studies to score highly on anxiety and depression indices, it is not clear whether study participants might have higher than average bother associated with their OAB symptoms or other conditions. However, as the study included a large "real-world" population, it likely included a representative range of patient-reported symptom bother and reflects the perceived relief of OAB experienced in clinical practice.

Conclusions

In the current study, symptom-specific data showed that solifenacin effectively improves subjects' MBS. Solifenacin was associated with significant improvements from baseline to study end in multiple PROs. At baseline, symptoms considered most bothersome by subjects were those with the worst VAS ratings. However, by study end, the greatest improvements in VAS scores occurred for the symptom reported as most bothersome by each MBS subgroup. Of all MBS subgroups, those with UUI as their MBS at baseline reported the most improved symptom-specific bother on the VAS, general symptom bother and overall HRQL (including four out of 5 domains) on the OAB-q, and perception of bladder problems on the PPBC.

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Conflicts of interest Dr Sand has acted as an Advisor for Allergan, Astellas, Esprit, GlaxoSmithKline, Indevus, Ortho, Pfizer, and Watson. He has received research grants from Allergan, Astellas, Indevus, Ortho, and Watson and has been a speaker for Astellas, Esprit, GlaxoSmithKline, Indevus, Ortho, and Watson.

Dr Steers is an Investigator for Allergan and is an employee of AUA as Editor of the *Journal of Urology*.

Dr Dmochowski has been a Consultant/Advisor for Allergan, Astellas, Indevus, and Novartis and an Investigator for Allergan.

Masakazu Andoh is a former employee of Astellas Pharma US Inc.

Dr Forero-Schwanhaeuser is an employee of GlaxoSmithKline.

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