Long-Term Clinical Efficacy and Cognitive Impact of Medications for Overactive Bladder Related to the Central Nervous System

KEY FINDING

Cognitive status — both baseline impairment and further decline — drives real-world outcomes far more than drug choice in this population.

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www.ics.org/2026/abstract/

Abstract No. 734

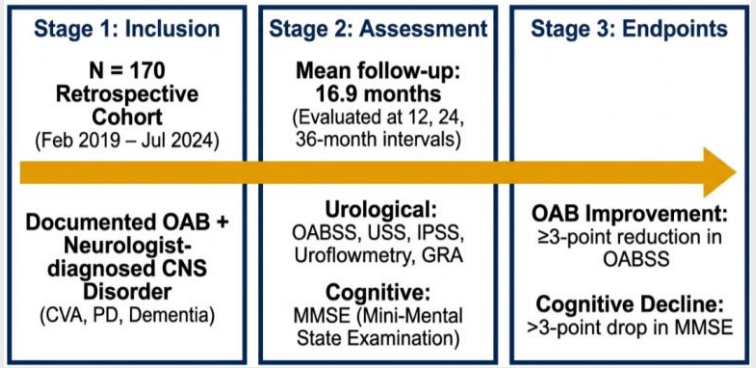
BACKGROUND

While combination therapy shows promise for overactive bladder, its long-term impact on neurogenic patients with CNS disorders remains unclear.

PURPOSE

To evaluate the long-term clinical efficacy and cognitive safety of monotherapy versus combination therapy in this highly vulnerable population.

METHODS



Baseline Characteristics

- Dementia group: oldest patients, highest proportion of women, and lowest MMSE scores
- Baseline OABSS and USS severity were similar across CNS subgroups
- Initial OAB medication type prescribed was comparable across groups

Characteristics	CVA ($n=95$)	PD ($n=32$)	Dementia ($n=43$)	Total ($n=170$)	p-value
Age (year)	72.7 ± 10.4	78.6 ± 5.9	80.4 ± 8.5	75.70 ± 9.86	0.000*
Sex					
Female	23 (24.2%)	9 (28.1%)	21 (48.8%)	53 (31.2%)	0.014*
Male	72 (75.8%)	23 (71.9%)	22 (51.2%)	117 (68.8%)	
Medication					
Solifenacin	22 (23.2%)	6 (18.8%)	8 (18.6%)	36 (21.2%)	0.443
Mirabegron	19 (20%)	11 (34.4%)	14 (32.6%)	44 (25.9%)	
Tolterodine SR	25 (26.3%)	6 (18.8%)	13 (30.2%)	44 (25.9%)	
Combined	29 (30.5%)	9 (28.1%)	8 (18.6%)	46 (27.1%)	
OABSS	9.1 ± 3.7	10.2 ± 3.8	9.7 ± 3.7	9.5 ± 3.7	0.371
USS	3.6 ± 0.95	3.6 ± 0.95	3.7 ± 0.8	3.6 ± 0.9	0.907
MMSE mean	25.5 ± 4.8	24.6 ± 5	20.9 ± 5.2	24.1 ± 5.3	0.000*
MMSE					
24–30	74 (77.9%)	18 (56.3%)	14 (32.6%)	106 (62.4%)	0.000*
18–23	11 (11.6%)	12 (37.5%)	17 (39.5%)	40 (23.5%)	
≤17	10 (10.5%)	2 (6.3%)	12 (27.9%)	24 (14.1%)	

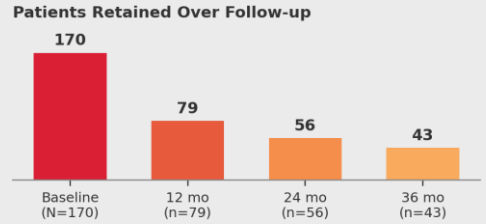
RESULTS-Cognitive Impact

- Regardless of cognitive status, baseline urinary symptom severity was similar; severe impairment (MMSE ≤17) showed the lowest symptom improvement and highest cognitive deterioration.

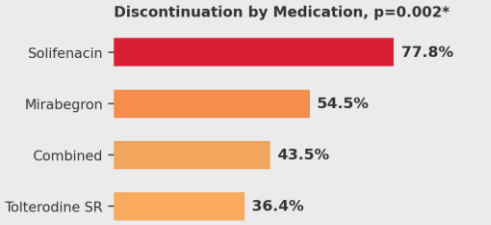
Baseline	MMSE: 24–30 ($n=106$)	MMSE: 23–18 ($n=40$)	MMSE: ≤ 17 ($n=24$)	Total ($n=170$)	p-value
Age (year)	73.3 ± 10.5	79.9 ± 6.7	79.5 ± 8.1	75.8 ± 9.9	0.000*
OABSS	9.2 ± 3.5	9.8 ± 4	10.2 ± 3.9	9.5 ± 3.7	0.403
USS	3.6 ± 0.9	3.7 ± 0.7	3.5 ± 1.1	3.6 ± 0.9	0.615
MMSE	27.5 ± 2.5	21.1 ± 1.7	14.5 ± 2.6	24.1 ± 5.3	0.000*
Discontinued	49 (46.2%)	22 (55%)	17 (70.8%)	88 (51.8%)	0.084
Improved	18 (36.7%)	2 (9.1%)	1 (5.9%)	21 (23.9%)	0.006*
Not Improved	11 (22.4%)	8 (36.4%)	2 (11.8%)	21 (23.9%)	0.191
GRA at 1 year	1.5 ± 0.98 ($n=94$)	1.7 ± 1 ($n=34$)	1 ± 0.7 ($n=22$)	1.5 ± 1 ($n=150$)	0.021*
Cognitive deterioration	6 (5.7%)	2 (5.0%)	6 (25.0%)	14 (8.2%)	0.049*
Deceased	11 (22.4%)	9 (40.9%)	8 (7.1%)	28 (31.8%)	0.098

- MMSE decline ≥3 pts (37% of cohort): worse post-treatment OABSS and USS (all p≤0.002)

Characteristics	No MMSE decrease by < 3 points ($n=107$)	MMSE decrease by ≥ 3 points ($n=63$)	Total ($n=170$)	p-value
OABSS				
Baseline	9.3 ± 3.8	9.8 ± 3.6	9.5 ± 3.7	0.442
Post-treatment	8 ± 3.8	10.6 ± 3.6	8.9 ± 3.9	0.000*
USS				
Baseline	3.6 ± 1	3.7 ± 0.8	3.6 ± 0.9	0.285
Post-treatment	3 ± 1	3.5 ± 0.9	3.2 ± 1	0.002*
MMSE mean				
Baseline	24.5 ± 5.3	23.6 ± 5.3	24.1 ± 5.3	0.295
Post-treatment	24.3 ± 5.2	16.84 ± 5.9	21.6 ± 6.5	0.000*
GRA	1.7 ± 1	1 ± 1	1.4 ± 1.1	0.000*
Treatment duration	30.6 ± 20.3	30.6 ± 18.8	30.6 ± 19.7	0.997



n declines reflect discontinuation (51.8%) and mortality (16.5%); mortality appeared disease-related per chart review, not formally analyzed.



OAB Symptom improvement was comparable across all medications (7-22%, p=0.871, not significant)