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Effects of Solriamfetol on Cognition in Patients With Excessive Daytime Sleepiness Associated with Narcolepsy

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Objective

- Does solriamfetol improve impaired cognition in patients with excessive daytime sleepiness associated with narcolepsy in a real-world setting?

Conclusions

- In this retrospective, real-world study, cognitive performance was assessed in patients with EDS associated with narcolepsy
- At baseline, patients reported overall cognitive impairment, which was substantially improved following 3 months of solriamfetol treatment
- At baseline, objective assessments revealed selective impairment in alertness and processing speed; substantial improvements in these domains were observed following treatment with solriamfetol
- Improvement in cognitive performance was not associated with reduction in EDS
- These results indicate that solriamfetol has the potential to improve cognitive function in patients with EDS associated with narcolepsy

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G.M.L. Eglit is an employee of Axsome Therapeutics, Inc.
S. Floam is an employee of Axsome Therapeutics, Inc and former employee of Jazz Pharmaceuticals.
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Introduction

- Narcolepsy is a chronic sleep disorder characterized by excessive daytime sleepiness (EDS)[1]
- Brain fog and difficulty concentrating are common complaints among patients and significantly impact their quality of life[2]
- Patients often exhibit deficits in processing speed and attention, core cognitive functions[3]
- Solriamfetol (Sunosi®) is a dopamine-norepinephrine reuptake inhibitor with agonistic properties at the trace amine-associated receptor 1 (TAAR1) and serotonin 1A ($5HT1_a$) receptor[1] approved for treatment of EDS associated with narcolepsy or obstructive sleep apnea (OSA)[4,5]
- Solriamfetol improved cognitive performance in a clinical study of patients with OSA and EDS with cognitive impairment[6]
- Here we present cognitive outcomes of patients with narcolepsy and EDS treated with solriamfetol in a real-world setting

Methods & Study Design

- **SU**nosi **R**eal **W**orld **E**xperience Stud**Y** (SURWEY) was a real-world, retrospective chart review among physicians in Germany of patients prescribed solriamfetol for EDS associated with narcolepsy type 1 and 2
- The present analysis is of a subgroup of 52 patients with narcolepsy who underwent cognitive assessments (**Table 1**) prior to initiating solriamfetol and 3 months following
- Results are pooled across dosages, and most patients received less than 150 mg/day, the maximum recommended dose

Assessment	Task	Domain
British Columbia Cognitive Complaints Inventory (BC-CCI)	Rate level of impairment on 6 items including memory, concentration, and expressing thoughts	Cognitive impairment
Test of Attentional Performance (TAP): Alertness, without warning	Push button in response to displayed signal	Sustained alertness
Test of Attentional Performance: Alertness, with warning	Push button in response to displayed signal preceded by warning tone	Acute alertness
Wechsler Adult Intelligence Scale-IV (WAIS-IV): Coding subtest	Variation of the Digit Symbol Substitution Test; match symbols to numbers based on key	Processing speed
Regensburger Word Fluency Test (RWT): "S-words"	Write down as many words starting with 's' as possible in 1 minute	Verbal fluency
Regensburger Word Fluency Test (RWT): "Animals"	Write down as many animal names as possible within 1 minute	Verbal fluency
Wechsler Memory Scale (WMS): Visual Reproduction I	Reproduce displayed images from memory	Visual memory
Wechsler Memory Scale (WMS): Visual Reproduction II	Reproduce displayed images from memory, following a delay	Visual memory

Key Findings

Patient Population

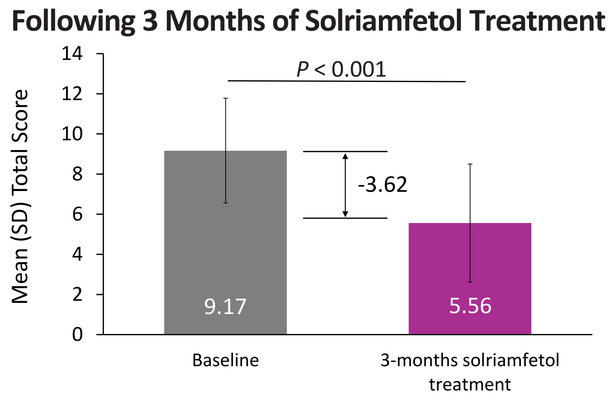
Table 2. Baseline Demographic and Clinical Characteristics

Patients	52
Age, mean ± SD	36.4±12.9
Sex	
Male, n (%)	29 (55.8)
Female, n (%)	23 (44.2)
ESS score, mean ± SD	17.4±2.9

Efficacy

Self-reported cognitive function

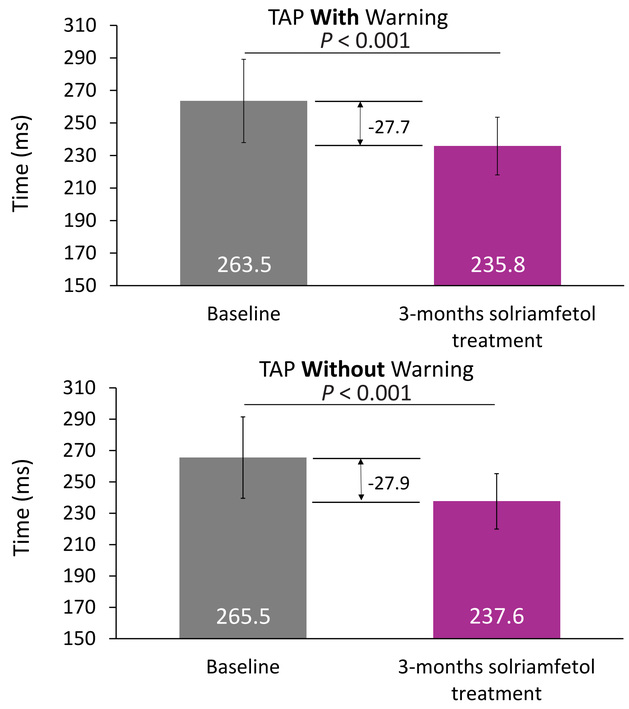
Figure 1. Scores on the BC-CCI at Baseline and Following 3 Months of Solriamfetol Treatment



- Mean baseline score on the BC-CCI indicated moderate cognitive impairment (**Figure 1**)
- Solriamfetol substantially and statistically significantly improved subjective cognitive function as measured by the BC-CCI (39.4% improvement from baseline to 3-month follow-up: $P < 0.001$)

Alertness

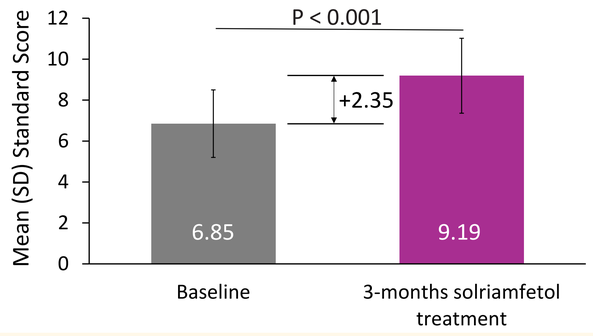
Figure 2. Scores on the TAP: Alertness, at Baseline and With Solriamfetol



- Baseline scores indicated impaired alertness on both TAP assessments (**Figure 2**), which have previously been used to assess cognitive deficits in patients with narcolepsy[7]
- Solriamfetol statistically significantly improved alertness on both measures (10.5%, $P < 0.001$ each)

Processing Speed

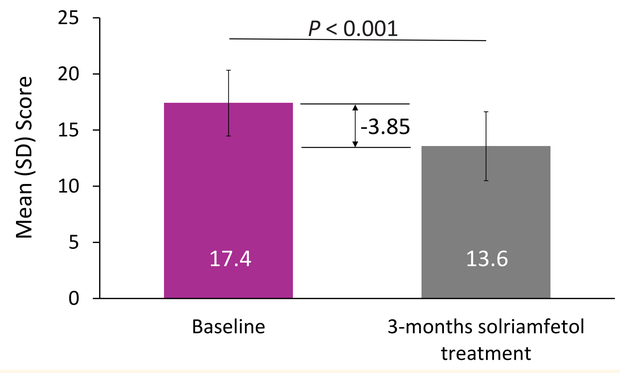
Figure 3. Scores on the WAIS-IV: Coding, at Baseline and With Solriamfetol



- Processing speed was evaluated with the Wechsler Adult Intelligence Scale-IV (WAIS-IV) coding subtest (**Figure 3**), a test previously used to assess cognitive deficits in patients with narcolepsy[7]
- Solriamfetol substantially and statistically significantly improved processing speed (34.3%: $P < 0.001$)

Excessive Daytime Sleepiness

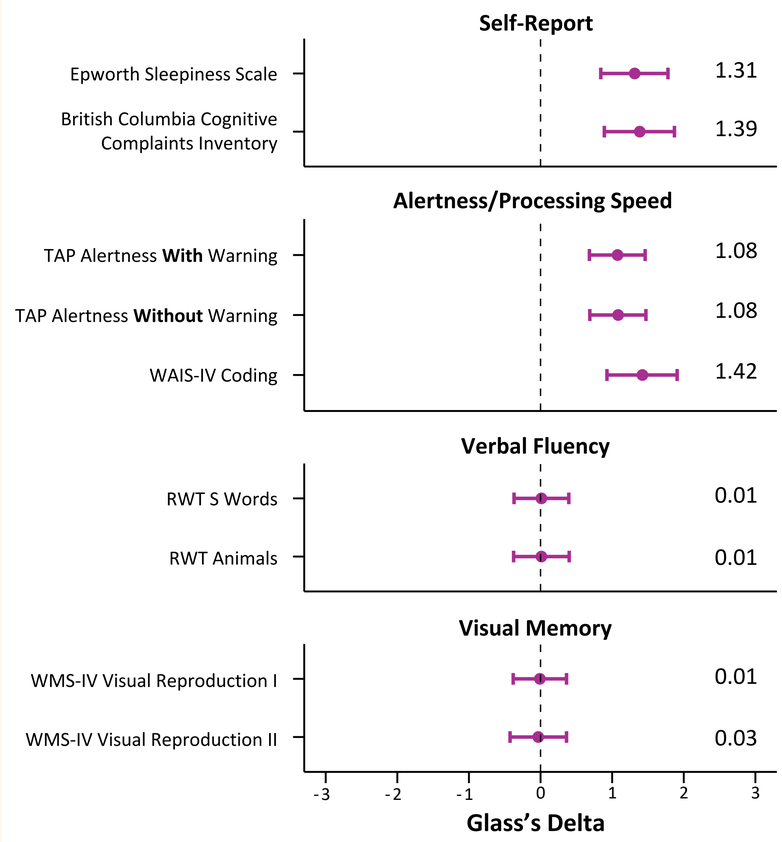
Figure 4. ESS Scores at Baseline and with Solriamfetol



- Solriamfetol resulted in a statistically significant reduction in EDS (**Figure 4**, $P < 0.001$)

Effect sizes

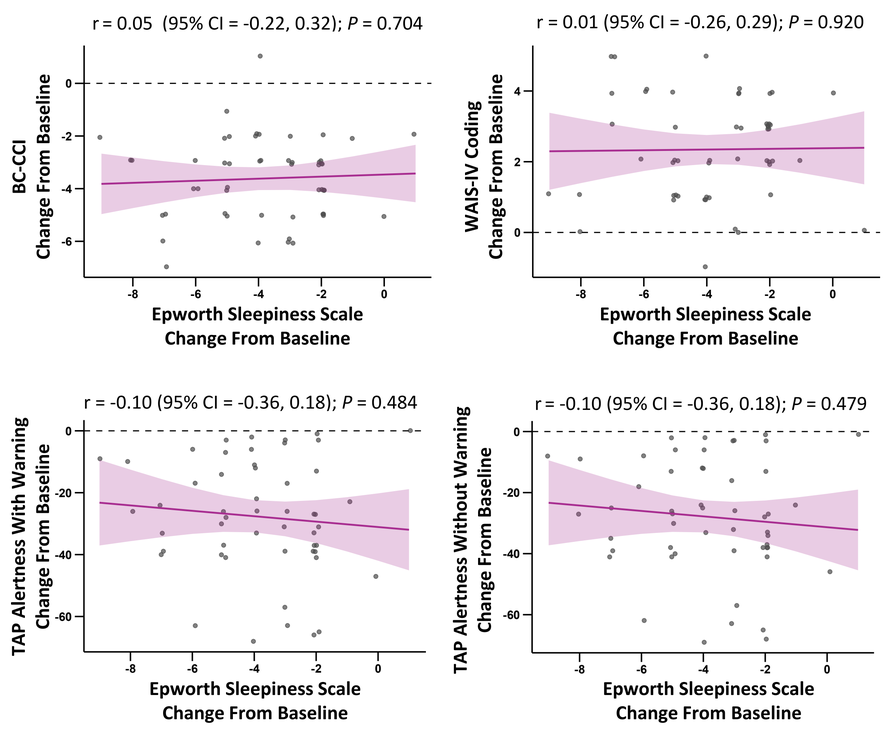
Figure 5. Standardized Effects of Solriamfetol on Cognition and EDS



- Reduction in EDS had a substantial effect size of 1.31 (**Figure 5**)
- Effect sizes for self-reported cognitive function (1.39, BC-CCI); alertness (1.08, TAP with and without warning); and processing speed (1.42, WAIS-IV coding) were also substantial
- No meaningful effects on verbal fluency or visual memory were observed

Regression analysis

Figure 6. Regression Analysis of Association Between Improvements in Cognition and Sleepiness



- ESS change was not predictive of improvements in self-reported cognitive function, alertness, or processing speed (**Figure 6**)