Common Alzheimer's medication helps skills necessary for safe driving

EurekAlert

PROVIDENCE, RI A promising study from Rhode Island Hospital demonstrated that cholinesterase inhibitors (ChEI), a type of medication often prescribed for Alzheimer's disease (AD), improved some cognitive skills in patients with mild AD skills that are necessary for driving. Findings from the study showed that after being treated with a ChEI, AD patients improved in some computerized tests of executive function and visual attention, including a simulated driving task. The study is published in the June 2010 edition of the *Journal of Clinical Psychopharmacology*.

The study was led by Lori Daiello, PharmD, a research associate at the Rhode Island Hospital Alzheimer's Disease and Memory Disorders Center (ADMDC). Daiello says, "Because many patients receiving a diagnosis of AD continue to drive in its early stages, it is critical that we assess driving safety among this population and identify therapies that may improve driving abilities. ChEIs are commonly prescribed for AD, yet little is known about how their potential treatment effects might impact a driver's skills."

The researchers studied the performance of 24 outpatients with newly-diagnosed, untreated, early stage AD using tests that simulate typical situations encountered in on-road driving. The subjects participated in computerized tests of visual attention (visual search performed alone or in conjunction with simulated driving) and executive function (maze navigation) both prior to beginning treatment with a ChEI and again after three months of therapy. The primary analysis consisted of comparing the test performance of AD patients before starting ChEI treatment and after three months of therapy. In a secondary cross-sectional analysis, the subjects' pre-ChEI computerized test performances were compared to the abilities of a matched group of AD patients who had performed the same computerized tests while receiving stable ChEI therapy (i.e., greater than three months) during a prior study of driving and dementia conducted at the Rhode Island Hospital ADMDC.

The researchers report that ChEI treatment demonstrated consistent effects in both the pre- and post-treatment comparison as well as the cross-sectional comparisons. There were three key findings:

- ChEI treatment was associated with improvement in the ability to accurately maintain lane position during the simulated driving task. This was noted in the pre- and post-ChEI treatment comparison. It was also noted as an effect of ChEI user status when the visual search task was performed without simulated driving in the cross-sectional comparisons.
- ChEI treatment was associated with improved target detection accuracy in the visual search task and quicker visual search response times in both the

pre- and post-treatment comparison and cross-sectional comparisons.
- After ChEI treatment, subjects completed the computerized mazes faster, although accuracy of completion was not affected.

Daiello, who is also an assistant professor of neurology (research) at The Warren Alpert Medical School of Brown University, says, "This study is the first of its kind to investigate how treatment might impact cognitive domains critical to driving safety in AD patients." While relatively little is known about how ChEIs affect cognitive functions in AD other than memory, these results indicate an improvement in either attention processes or executive control. The investigators note that while the results are encouraging, this study lacked a direct measure of on-road driving performance. These preliminary findings, however, warrant further investigation. As Daiello says, "The results show an improvement in the skills that will impact a patient's ability to perform tasks associated with safe driving."

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