Cholinesterase Inhibitors for Treatment of Alzheimer’s Disease: Physicians’ Current Knowledge and Barriers to Use

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ABSTRACT

Background: Cholinesterase inhibitors may delay symptom worsening and postpone the necessity for full-time nursing care in patients diagnosed with Alzheimer’s Disease (AD). However, prescribing of these compounds may be associated with small, but potentially significant risks of bradycardia and syncope. This investigation sought to examine, in a large, diverse sample of community-based physicians, perceived barriers to the use of cholinesterase inhibitors and the degree to which knowledge of potentially dangerous side effects associated with these medications can increase across an educational event.

Method: Responses from physicians who attended 2007 Massachusetts General Hospital Psychiatry Academy CME events held in ten cities across the United States were used for this analysis. The focus of this report is on the pre- and post- event activities of an educational event titled, “Geriatric Psychiatry Lecture Question.” An audience response system was utilized to capture participants’ responses to the questions.

Results: 512 of 1,229 (41.7%) participants responded to the pre/post activity question. A 25.1% knowledge increase was observed (32.0% vs. 57.1% pre/post event), representing significant learning during the event (p<0.05). The most frequently endorsed barrier to prescribing these medications was worry about bradycardia, syncope, and seizure (31.1%). When analyzing provider characteristics, no significant differences were found in perceived barriers between psychiatrists and other physicians (p=0.25).

Conclusion: Data from this investigation suggest a relatively low baseline level of knowledge concerning the significant potentially dangerous side effects of a front-line treatment for AD, and a substantial impact on knowledge of CME delivered in a live symposia format. Future studies are needed to develop methods to better disseminate and demonstrate acquisition of information regarding current time nursing care in patients diagnosed with Alzheimer’s Disease.

INTRODUCTION

Alzheimer’s dementia is an irreversible neurodegenerative illness that impacts 5.2 million Americans and tens of millions of people worldwide. Cholinesterase inhibitors are the most-widely used agents in the treatment of Alzheimer’s dementia, and are the only medications that are FDA-indicated for mild stages of the illness. These agents have been found to have modest but consistent effects on cognitive decline and global functioning, and may reduce behavioral disturbances and delay time to nursing home placement. However, experts have noted that these agents appear to be underused. Because of their mechanism of action, cholinesterase inhibitors can have several important side effects, some of which are rare but potentially dangerous and require cautious use and careful monitoring in patients with certain medical conditions. Given the potential utility and adverse effects of this class of medications, we attempted to assess the barriers to clinicians’ use of cholinesterase inhibitors in their patients. In addition, we aimed to determine whether clinicians were aware of rare but potentially dangerous side effects of the cholinesterase inhibitors and whether a lecture about these agents improved their knowledge about such side effects.

METHOD

Study Procedures

- Data derived from ten full-day live symposia of the MGH-PA 2007 semester I program, 1,229 total physician participants (mean attendance = 123 per event).
- Six lectures delivered at each event, including a geriatric psychiatry lecture titled, “Cognitive Enhancements in the Treatment of Dementia: Are They Worthwhile?”
- Data points included a polling question: “A 74 year-old woman presents to you with complaints of impaired short-term memory and difficulty with getting lost in new places. After diagnostic evaluation and medical work-up, you diagnose her with mild Alzheimer’s dementia. She asks you about medication in the treatment of these disorders, especially the cholinesterase inhibitors. Which of the following (if any) is the biggest barrier to your use of this class of medications?” (A. Agitation/Anxiety/Insomnia, B. Nausea/Diarrhea, C. Bradycardia/Syncope/Serum, D. Lack of Efficacy, E. None)
- Data points also included a pre/post activity question: “You are seeing an 81 year-old woman with moderate Alzheimer’s dementia, and are considering addition of memantine or a cholinesterase inhibitor to her regimen. She is quite concerned about side effects. Which of the following is true regarding these agents?” (A. Constipation, B. Agitation, C. Sedation, D. Bradycardia and Syncope)
- Poling question was presented at the very beginning of the presentation. An audience response system was utilized to capture participants’ responses to the questions.
- The pre and post activity questions were identical and occurred at the outset and then conclusion of the geriatric psychiatry lecture.

Placement of Questions/ Representing Data Points

Speaker Introduction → Polling Question → Pre-Activity Question → Lecture → Post-Activity Question

Data Analysis

- A total of 759 (61.8%) participants responded to the polling question, and all of these responses were included in the polling question analysis.
- 707 of 1,229 (57.5%) total participants responded to the pre-activity geriatrics question, while 768 (62.5%) responded to the post-activity question.
- We included only data representing participants who responded to both pre and post activity questions (n=512, 41.7%).
- Descriptive statistics were utilized to calculate knowledge increase as well as perceived barriers to the prescription of these medications.
- Chi square analyses were used to determine whether the effects of receiving the lecture resulted in significantly improved accuracy on the post activity question and whether perceived barriers differed between psychiatrists and other physicians.

RESULTS

Outcome #1: Participants’ ability to acquire knowledge of side effects during a live educational event

Accuracy on the pre/post-activity question (about the primary side effects of cholinesterase inhibitors) increased at each of the program sites. Overall, the proportion of correct answers on the question post-activity was 57.1%, compared to 32.0% prior to the lecture, with no difference across event sites. This pre-post improvement in performance was statistically significant, X2 = 65.0, df=1, p<0.001.

Table 1. Accuracy on Pre/Post Question for Prescribing Physicians

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Figure 1. Accuracy on Pre/Post Question for Prescribing Physicians

n=510

p<0.001

Outcome #2: Barriers to prescription of cholinesterase inhibitors

Overall, nearly one-third of participants (31.1%) reported that worries about bradycardia, syncope, or seizure was a significant barrier to prescription of cholinesterase inhibitors. Approximately half of participants (47.3%) reported that the risk of other types of side effects was a barrier to prescribing these medications. Only 16% reported that they frequently use these agents in practice, and 16% believe these agents to be ineffective.

Table 2. Polling Question Responses

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<th>Percentage</th>
<th>Possible risk of agitation, anxiety, or insomnia with these agents</th>
<th>Propensity of these agents ... of efficacy of these agents—they don’t seem to help much</th>
<th>None—I frequently use these agents in appropriate patients</th>
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Figure 2. Polling Question Responses

n=759

REFERENCE


CONCLUSION

A relatively low level of knowledge exists concerning the significant side effects of the most widely-used treatment for Alzheimer’s Disorder.

The MGH-PA geriatric psychiatry lecture on cognitive enhancers led to robust improvement in the awareness of side effects associated with cholinesterase inhibitors.

The use of an audience response system to assess patient learning is an effective means of assessment, with over 500 attendees responding to each question.

It will be important to evaluate the ability of the MGH-PA and other CME programs to influence longer-term learning, changes in clinical practice, perceptions of benefit, and ultimately impact patient outcomes.

Limitations of this study include the non-randomized nature of the sample, heterogeneity of the participants’ professional discipline, possible ambiguity regarding the correct response to the questions, and response to both the pre and post activity questions by a relatively small percentage of participants.