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Efficacy and safety of donepezil, galantamine, rivastigmine, and memantine for the treatment of Alzheimer's disease: a systematic review and meta-analysis

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Abstract

Background: The role of currently available drugs for Alzheimer's disease (AD) has been controversial, with some national formularies restricting their use, and health economists questioning whether the small clinical effects are economically worthwhile.

Objective: To estimate the efficacy and safety of donepezil, galantamine, rivastigmine, and memantine for the treatment of AD.

Methods: Double-blind, placebo-controlled, with random assignment to a cholinesterase inhibitor or memantine trials were included into the pooled studies.

Results: Cognitive effects were significant for all drugs, ranging from a -1.29 points mean difference (95% CI -2.30 to -0.28) in the 20 mg daily memantine trials to -3.20 points (95% CI -3.28 to -3.12) in the 32 mg daily galantamine group. Only memantine had no effect on the Clinicians' Global Impression of Change scale. No behavioral benefits were observed, except for -2.72 (95% CI -4.92 to -0.52) in the 10 mg daily donepezil group and -1.72 (95% CI -3.12 to -0.33) for 24 mg daily galantamine trial. Only 5 mg daily donepezil had no effect on the function outcome. Compared with placebo, more dropouts and adverse events occurred with the cholinesterase inhibitors, but not with memantine.

Conclusions: Cholinesterase inhibitors and memantine are able to stabilize or slow decline in cognition, function, behavior, and global change.

Keywords: Alzheimer's disease; donepezil; efficacy; galantamine; memantine; meta-analysis; rivastigmine; safety; systematic review.

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