Age as a Predictor of Cognitive Decline in Bipolar Disorder

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Objective: *Cognitive dysfunction is a core feature of bipolar disorder (BD) in both adult and geriatric patients. However, little is known about whether cognitive functioning declines at a faster rate in patients with BD, and there are conflicting reports regarding the relationship between age and cognitive functioning in this population. This cross-sectional study examined the relationship between age and cognitive functioning in patients with BD.* **Methods:** *Patients with BD I (N = 113) and healthy adults (N = 64) ages 18–87 completed measures of processing speed, attention, executive functioning, verbal fluency, and clinical symptomatology. Groupwise comparisons were used to examine differences between patients and the comparison group and adult and geriatric BD cohorts. A series of linear regressions was conducted to examine the relationship of age and cognitive functioning and clinical variables and cognition.* **Results:** *Patients performed significantly worse than the comparison group on all neuropsychological measures. Age was a significant predictor of Trails A scores with older age associated with worse performance.* **Conclusions:** *Older age was associated with poorer performance on Trails A in patients with BD but not healthy adults. These results are suggestive of greater dysfunction in processing speed with older age in patients with BD compared with a healthy comparison group. Because cognitive functioning is associated with community outcomes, these findings suggest a need for treatments targeting cognitive symptoms across the life span. Future research exploring neurobiologic evidence for neurodegenerative processes in BD will pave the way for potential therapeutic interventions.* (Am J Geriatr Psychiatry 2013; ■:■–■)

Key Words: Bipolar, cognitive, aging, life span

INTRODUCTION

Cognitive dysfunction is increasingly recognized as a core feature of bipolar disorder (BD). The severity of neuropsychological deficits in BD may rival those described in schizophrenia and related psychotic disorders.[1–3] However, the longitudinal course of these deficits in BD is unclear. Neuropsychological

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deficits are commonly reported in both adult and geriatric patients with BD;[4,5] however, few studies have examined the course of neuropsychological dysfunction in patients with BD across the life span.

Adults with BD exhibit a range of cognitive deficits that persist across illness stages and during symptom remission, suggesting that cognitive dysfunction is a trait feature of BD.[6–10] Executive functioning and verbal learning and memory are the most consistently reported impaired cognitive domains in adults with BD.[6,11] Other studies report significant deficits in working memory, visuospatial learning and memory, verbal fluency, attention, and processing speed compared with healthy adults,[2,3,7,10,12] although not all studies report deficits in the same domains or of the same magnitude.[13]

Studies of cognition in geriatric BD samples are consistent with cognitive findings in adult BD, with performance deficits of medium to large effect and falling one or more standard deviations below the mean.[14,15] Deficits have been demonstrated in executive functioning,[16] working memory, verbal memory, attention, construction,[4,17] and processing speed.[18] Depp et al.[5] found that geriatric BD patients display a diffuse range of deficits and perform similarly to geriatric patients with schizophrenia on at least half of the neuropsychological measures tested. Similar to findings in younger adult samples, cognitive deficits in geriatric patients with BD appear to persist during periods of euthymia.[18–20]

The course of cognitive functioning over the adult life span in BD is not well understood. Few studies have examined neuropsychological deficits in BD across the age continuum either longitudinally or cross-sectionally. In some reports, aging has been found to correlate with worse performance on neuropsychological measures in BD.[14] Older adults with BD and healthy adults both exhibited a decline in neuropsychological functioning over a 3-year follow-up period; however, the rate of decline was more rapid for the older BD patients.[19] A recent cohort study reported that the presence of psychotic symptoms in older adults without dementia was associated with poorer cognitive functioning and more rapid cognitive decline over a 6-year follow-up.[21] Conversely, others have found no decline in cognition over the illness course in BD. In a 6-year follow-up study of euthymic BD, Mora et al.[22] found stable neuropsychological deficits; Gildengers et al.[23] found no evidence of accelerated cognitive decline during a 2-year follow-up, and Burdick et al.[24] found that patients with BD actually improved on measures of verbal memory and executive functioning—but not attention—after a 5-year follow-up. However, it is possible that cognitive decline occurs gradually, and the follow-up periods above were not long enough to detect these trends.

Goals and Hypotheses

The present study aimed to clarify the relationship between aging and neuropsychological functioning in a large cross-sectional sample of adults with BD I disorder and an age-comparable comparison group of adults without psychiatric illness across a broad age range (ages 18–87 years). We hypothesized that both adult and geriatric patients with BD would perform significantly worse on all measures of neuropsychological functioning relative to adult and geriatric healthy adults. Further, we expected greater cognitive dysfunction with older age in BD compared with the comparison group.

METHODS

Participants

Participants were pooled from independent samples of subjects collected from the Schizophrenia and Bipolar Disorder Program and the Geriatric Mood Disorders Research Program at McLean Hospital. All procedures were approved by the McLean Institutional Review Board. Subjects from the Geriatric Program were drawn from five studies of mood disorders in patients aged 55–89 including treatment trials of older adults with bipolar depression, a nontreatment 3-year longitudinal study of older adults with psychiatric illness, and healthy control subjects from both the treatment and longitudinal studies. Subjects were recruited through McLean Hospital inpatient and outpatient programs, community flyers, media advertising, and referrals from local physicians, psychiatrists, and other clinicians. Diagnosis was confirmed by Structured Clinical Interview for *Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition* (DSM-IV) (SCID) conducted by a licensed geriatric psychiatrist. All