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# Review

# Cognitive impairment in bipolar disorder in old age: Literature review and findings in manic patients

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#### Abstract

Background: Descriptions of aged patients with bipolar (BP) disorder have commented on cognitive impairments. However, the literature regarding cognitive test performance in this population has apparently been scant.

*Method:* 1. We reviewed studies reporting cognitive performance in aged BP patients. 2. We compared the performance of elderly BP manic patients and aged community comparison subjects on the Mini-Mental State Examination (MMSE) and the Mattis Dementia Rating Scale (DRS).

Results: 1. Seven published studies of cognitive measures in aged BP patients were identified. They utilized different assessment methods and addressed different illness states, but they indicate impairments in these patients. 2. In our sample, the manic patients (n=70) had lower MMSE scores and DRS scores than did the comparison subjects (n=37). In these patients, cognitive scores were not significantly associated with Mania Rating Scale scores.

Limitations: The patients in our study were assessed cross-sectionally, and they were treated naturalistically.

Conclusions: Manic or depressed BP elders have impaired cognitive function; in some patients these impairments may persist. Research characterizing these impairments and their clinical implications is warranted.

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Keywords: Geriatric; Bipolar; Mania; Cognition

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## 1. Introduction

Descriptions of aged patients with bipolar (BP) disorder have commented on cognitive impairments (Post, 1965; Slater and Roth, 1977). In a retrospective study, Stone (1989) reported that aged manic patients can have memory impairment. BP elders can be challenging to treat, and are at risk for poor outcomes (Young et al., 2004). Accessible measures that can contribute to improving their management are critically needed (Charney et al., 2003).

Cognitive impairments are also described in younger BP patients. Kraepelin (1921) stated that even delirium accompanied mania in a small proportion of cases. In an early investigation, Clayton et al. (1965) reported chart documentation of disorientation and memory lapses in mixed-age BP manic patients. Recent neurocognitive studies found that younger BP patients can demonstrate both state and trait-related impairment (Ferrier and Thompson, 2002; Quraishi and Frangou, 2002).

Despite the importance of cognitive dysfunctions in the aged, apparently few studies have examined BP elders using standardized cognitive assessments. The first aim of this report is to summarize studies in geriatric patients, noting their clinical state when tested. Second, we present preliminary findings testing the hypothesis that, on cross-sectional examination, BP elders with manic episodes have impaired cognitive performance compared to that of aged comparison subjects from the community.

#### 2. Methods

# 2.1. Review of literature

Literature from 1970 to August 2005 was searched with MEDLINE. The keywords used were: bipolar, aged, geriatric, cognitive, manic, depressed, and neuropsychology. "Aged" or "geriatric" were defined by the commonly accepted criterion of age ≥ 60 yr. Selected studies of younger BP patients were also identified that included consideration of age effects on cognition, and that provided heuristic background.

## 2.2. Cornell study

We assessed cognitive performance in aged BP manic patients of the geriatric psychiatric service of a university hospital, and in an aged comparison group. The patient inclusion criteria were: 1. diagnosis of bipolar disorder type I, manic episode (DSM-IV; American Psychiatric Association, 1994); 2. age  $\geq$  60 yr; 3. written informed consent. The patient exclusion criteria were: 1. Mania Rating Scale (YMRS)<15 (Young et al., 1978); 2. active substance abuse; 3. diagnosis of dementia; 4. acute or unstable medical condition; 5. sensory impairment; 6. lack of fluency in English. Comparison subjects from the community were aged  $\geq$  60 yr, did not have psychiatric illness or neurological disease, were in stable physical health, and gave written informed consent.

Assessments were performed once on all subjects. In patients, YMRS ratings were obtained on the same day as cognitive assessments. Patient subjects received naturalistic treatment.

Two instruments were used for cognitive assessment. The Mini-Mental State Examination (MMSE; Folstein et al., 1975) is a brief, validated screening instrument that has been used extensively in studies of aged patients with depression and related disorders. The MMSE requires 5 min to complete. The Dementia Rating Scale (DRS; Mattis, 1989) provides a global index of cognitive status, as well as sub-scores of five cognitive domains: Attention, Initiation—Perseveration, Construction, Conceptualization, and Memory. The scale has been utilized in studies of aged symptomatic patients with unipolar depression (Butters et al., 2000) and other disorders (Rosser and Hodges, 1994). The full DRS requires 30 min to complete.

Folded *F*-test was used for comparison of distribution of scores. Unequal variance *t*-test and general linear models were used for comparison of the two groups. Two-tailed levels of significance are reported. Data analysis was performed with the Statistical Analysis Software (SAS, Cary, N.C.).

#### 3. Results

## 3.1. Literature review

Seven studies of aged BP patients were identified that included cognitive measures. These studies are summarized in Table 1. Several additional preliminary reports are included in the Discussion.

The studies summarized in Table 1 represent 231 manic and/or BP elders. The MMSE was the most

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