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Commentary Open Access

Cognitive Impairment in Bipolar Disorder: Comparison with Cognitive Impairment in Schizophrenia

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Abstract

The present commentary aims to investigate findings of cognitive impairment in bipolar disorder in comparison with those in schizophrenia. Bipolar disorder may share a subtle neurodevelopmental deviation with schizophrenia. However, premorbid enhanced cognitive function can be a risk factor only for bipolar disorder. Performance patterns of social and nonsocial cognition may be oppositional between the two disorders. Comparison of cognitive impairment between bipolar disorder and schizophrenia needs to consider the possibility of cognitive heterogeneity within each disorder.

Keywords: Cognitive impairment; Cognitive performance; Bipolar disorder; Schizophrenia

Introduction

Recent studies of bipolar disorder have focused on cognitive impairment of the illness because cognitive dysfunction is considered highly correlated with psychosocial functioning. The results are not fully consistent and many issues remain unclear. On the other hand, cognitive impairment of schizophrenia patients has been well replicated including the pre-psychotic phase of illness. Researchers and clinicians have increasingly approached schizophrenia as a neurodevelopmental disorder with possibility of prevention focusing on the pre-morbid phase [1]. The present commentary aims to investigate findings of cognitive impairment in bipolar disorder in comparison with those in schizophrenia.

Pre-morbid cognitive impairment

Cognitive underperformance such as low IQ is a risk factor for schizophrenia and cognitive decline precedes the onset of psychosis by many years. Pre-morbid cognitive dysfunction has not been considered a dominant feature of bipolar disorder. MacCabe et al. [2] prospectively examined possible associations between scholastic performance and later bipolar disorder in a whole-population cohort study. Interestingly, individuals with excellent school performance had an increased risk of later bipolar disorder compared with those with average performance (hazard ratio HR=3.79, 95%CI 2.11-6.82). Individuals with the poorest grades also had a moderately increased risk of bipolar disorder (HR=1.96, 95%CI 1.06-3.28). However, Zammit et al. [3] suggested in a historical cohort study during a 27-year follow-up period that lower IQ score was associated with increased risk for schizophrenia, but not bipolar disorder. A study of Tiihonen et al. [4] examined healthy male subjects and suggested that a high score for arithmetic reasoning was associated with a more than 12-fold greater risk of later bipolar disorder. In addition, poor performance on the visuospatial reasoning test was associated with higher risk for schizophrenia, bipolar disorder, and other psychosis, respectively. Although bipolar disorder may etiologically share a subtle neurodevelopmental deviation with schizophrenia, enhanced cognitive function can be a risk marker only for bipolar disorder.

Post-onset cognitive impairment

Bipolar disorder patients have cognitive impairment throughout the course of illness including euthymic phase. Cognitive domains such as attention, memory, and executive function may be impaired. There is agreement that cognitive impairment in bipolar disorder has less severity than that in schizophrenia. A study of Martino et al. suggested that 30% of patients with bipolar disorder were indistinguishable from healthy subjects in neurocognitive functioning [5]. However, it remains questionable whether bipolar disorder and schizophrenia patients show similar patterns of cognitive performance. Lee et al. [6] examined both social and nonsocial cognitive performance between clinically stable outpatients with bipolar disorder, those with schizophrenia, and healthy comparison subjects. For social cognition, the schizophrenia patients performed significantly worse than the individuals of two groups, and the bipolar group did not differ from the comparison group. For nonsocial cognition, the schizophrenia group performed worst and the comparison participants performed best. The bipolar patients performed significantly better than the schizophrenia patients and significantly worse than the comparison participants. Moreover, a significant group-by-domain interaction suggested that bipolar patients showed less impaired social than nonsocial, while schizophrenia patients showed the opposed pattern.

Cognitive impairment may have heterogeneity within bipolar disorder. A study [7] reported that a factor analysis of social cognition scores in bipolar disorder patients led to a two-factor solution (social/emotional processing and theory of mind) and that only the social/emotional processing scores differentiated the bipolar patients with psychotic features from those without. Comparison of cognitive impairment between bipolar disorder and schizophrenia needs to consider the possibility of cognitive heterogeneity within each disorder.

Conclusions

If pre-morbid cognitive decline in schizophrenia may result

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from lag behind healthy individuals in cognitive development [8], the findings of pre-morbid enhanced cognitive function in bipolar disorder suggest that partly different neurodevelopmental mechanisms underlie between bipolar disorder and schizophrenia. Performance patterns of social and nonsocial cognition in bipolar disorder may be in opposition to those in schizophrenia. However, comparison of cognitive impairment between both disorders needs to consider the possibility of cognitive heterogeneity within each disorder.

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