Abnormalities of Midline Structures in Schizophrenia Patients: Relation to Symptomatology and Cognitive Function

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ABSTRACT

Patients with schizophrenia have been reported to have significant abnormalities in midline brain regions. Several studies have documented that patients with schizophrenia have increased rate of enlarged cavum septi pellucidi (CSP) compared with healthy control groups whereas, Abnormalities of corpus callosum in schizophrenia are controversial. However, the relationship between these abnormalities and symptoms and cognitive functions is not well studied. The present study is designed not only to detect midline abnormalities in schizophrenic patients but also to evaluate the clinical correlates of these abnormalities.The study has included 30 schizophrenic patients and 30 normal control subjects groups according to the presence or absence of significant abnormalities in midline brain regions and both groups were submitted to Assessment of Positive Symptoms (SAPS), Assessment of Negative Symptoms (SANS) and Luria Nebraska Neuropsychological Battery (LNNB). 26.67% of schizophrenic patients showed abnormal (enlarged) cavum septum pellucidum compared to 3.33% of control subjects. On the other hand, no statistically significant corpus callosum area differences has been found between the two groups. On the other hand schizophrenic patients with enlarged cavum septum pellucidum got statistically significant higher mean score on three items of SANS (emotional withdrawal, difficulty in abstract thinking and lack of spontaneity and flow of conversation) compared to schizophrenic patients without enlarged C.S.P. whereas no statistically significant difference between the mean scores of the two groups on any of the seven items of SAPS. Regarding comparative performance on different clinical scales of LNNB it was found that patients with enlarged C.S.P. got statistically significant higher percentages of pathological T scores on five clinical scales, namely, attention scale (C2), expressive speech scale (C6), arithmetic ability scale (C9), memory scale (C10) and intellectual processing ability scale(C11) .

Introduction

Patients with schizophrenia have been reported to have significant abnormalities in midline brain regions such as corpus callosum, septum pellucidum and cerebellar vermis (Scott et al., 1993; Woodruff et al., 1995 and Shenton et al., 1997). Several studies have documented that patients with schizophrenia have increased rate of enlarged cavum septi pellucidi (CSP) compared with healthy control groups (Shioiri et al., 1996; Nopoulos et al., 1997; Known et al., 1998 and Nopoulos et al., 1999). Abnormalities of corpus callosum in schizophrenia are controversial. Although most studies reported no statistically significant corpus callosum area differences between schizophrenia patients and control subjects, few studies found differences in the structure's shape between the two groups. They suggested that these differences reflect a midline neurodevelopmental abnormality (De Quardo et al., 1999 and Downhill et al., 2000). However, the relationship between these abnormalities and symptoms and cognitive functions is not well studied (Nopoulos et al., 2000). The present study is designed not only to detect midline abnormalities in schizophrenic patients but also to evaluate the clinical correlates of these abnormalities in patients with schizophrenia.

Subjects and Methods

A random sample of 30 schizophrenic patients diagnosed according to DSM IV in a large private general hospital. Their ages ranged from 20 to 40 years old, had no history of electroconvulsive therapy, neurological illness, major head trauma, or alcohol and/or drug abuse. A control group of 30 normal subjects recruited from clinics of other specialities. They had no history of drug/alcohol abuse, neurological or psychiatric illness in themselves or in their first degree relatives.

1.Both groups were subjected to MRI study and the results were investigated.