

Study of cognitive function in ultra-high risk population of schizophrenia

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Abstract: To study the cognitive functions of schizophrenia patients in high-risk groups (psychosis risk syndrome), and to discuss related risk factors. We did a single-blind randomised controlled trial at Qingdao Mental Health Center between 15 Feb, 2013, and 30 May, 2014. Participants aged 14-30 years. Cognitive functions were assessed by conducting schizophrenic cognitive test battery-consensus version (MCCB) and Stroop Color Word test in 30 subjects with ultra-high risk schizophrenia (ultra risk group) and 30 normal controls (normal group). The scores of connection test and Hopkins verbal learning test were not significantly different between the 2 groups. The scores of symbol coding, simple visual memory test-revised edition (BVMT-R), continuous performance test (CPT) were all significantly different between the 2 groups (all $P < 0.05$). However, the scores of Stroop Color Word test were not significantly different between the 2 groups. Widespread cognitive impairments exist among patients in the high risk schizophrenia group. Cognitive impairments may appear before onset of schizophrenia, suggesting that they may also be used as quality indicators of schizophrenia.

Keywords: Cognitive function; Ultra high risk; Psychosis

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1. Introduction

Schizophrenia is a chronic psychiatric illness with dire prognosis. Most schizophrenia patients present symptoms of declining social and mental functions, which have significant consequences for their daily lives. Over the last 15 years, a focus on early intervention in psychotic disorders has emerged. Initially, the early psychosis movement focused on timely recognition and phase-specific treatment of first-episode psychosis. However, early psychosis researchers suspected that pushing the point of intervention even further back to the Pro-dromal phase of psychotic disorders may result in even better outcomes. For a long time, due to lack of adequate knowledge of mental health, as well as social prejudice and discrimination, there were no effective intervention or treatment measures against schizophrenia. Cognitive deficits are viewed as central to the underlying pathophysiology of established psychotic disorders, particularly schizophrenia, with the most consistent findings being problems in attention, memory and higher-order executive functions [1-2]. These deficits are present at the first

onset and are largely unrelated to positive symptomatology [3-4]. However, there is some evidence that cognitive deficits are present prior to the onset of psychosis in schizophrenia.

2. Methods

2.1. Setting

This study was conducted at Qingdao Mental Health Center. The study was approved by the Human Subjects Review Committee of the Hospital. Informed consent was obtained from those who met criteria and were judged fully competent to give consent. Parental consent was obtained from parents/guardians of participants who were under age 16.

2.2 Sample

Recruitment of participants between 14 and 30 years old was sought from a variety of sources including student counselors, and community mental health teams and practitioners. Recruitment and ascertainment methods included advertisement on public transit and have been described elsewhere. All

CHR participants were required to meet the Criteria of Pro-dromal States (COPS) using the Structured Interview for Pro-dromal Symptoms (SIPS). Participants were excluded if they met criteria for any current or lifetime axis psychotic disorder, prior history of treatment with an antipsychotic, IQ<70 or past or current history of a clinically significant central nervous system disorder which may confound or contribute to Pro-dromal symptoms. All participants gave informed consent for participation.

2.3 Measures

Cases were grouped according to the criteria for each of the ultra-high risk categories. Cases were also grouped according to age in one-year divisions. Cognitive function was assessed by schizophrenic cognitive test battery-consensus version (MCCB) and Stroop Color Word test in subjects with ultra-high risk schizophrenia (ultra risk group) and normal controls (normal group). There were 30 cases in each group. Raters were experienced research clinicians who has adequate reliability at routine reliability checks.

Psychopathological symptoms were assessed by three standardized trained psychiatrist. Internal consistency check, Kappa value is 0.88.

2.4 Statistical methods

All data were stored anonymously and analyzed using SPSS, version 13.0. An alpha of $p<0.05$ was considered statistically significant.

3. Results

The scores of connection tests and Hopkins verbal learning test were not significantly different between the two groups. The scores of symbol coding, simple visual memory test-revised edition (BVM-T-R), continuous performance test (CPT) were significantly different between the two groups (all $P<0.05$). The cognitive function test performance in the ultra risk group was ranged from normal group (Table 1). Scores of the Stroop Color Word test were not significantly different between the 2 groups (Table 2).

Table 1 MCCB scores of subjects in the ultra risk group and the normal group ($X \pm S$)

Subject	ultra risk group	normal group	P
connection test	26.87 \pm 4.85	27.69 \pm 8.24	0.084
symbol coding	64.58 \pm 8.42*	58.94 \pm 8.67	0.036
HVLT- R	23.18 \pm 5.21	22.14 \pm 6.34	0.093
BVMT- R	23.46 \pm 6.39*	21.42 \pm 7.64	0.041
CPT	3.05 \pm 0.47*	2.47 \pm 0.54	0.032

* compared with the normal group: * $P<0.05$

Table 2 Scores of Stroop Color Word test in the ultra risk group and the normal group ($X \pm S$)

Subject	ultra risk group	normal group	P
Word	87.87 \pm 20.85	100.69 \pm 18.24	0.064
Color	70.58 \pm 16.42	78.94 \pm 18.67	0.086
Color-Word	43.18 \pm 10.21	48.14 \pm 8.34	0.073

* compared with the normal group: * $P<0.05$

4. Discussion

According to the World Health Organization, the global lifetime risk of schizophrenia is about 3.8% to 8.4%. The majority of patients will appear a recession

and social function defect [5]. The UHR's mental health problems gradually attention. Early clinical recognition and effective clinical intervention are

critical to reduce the prevalence and social economic burden of this disease [6]. In this study, we adopted the cognitive function test from MCCB, which measures information processing speed, HVLT-R and BVMT-R, CPT, among other cognitive functions. In addition, the Stroop Color Word test, which measures working memory capacity, was also conducted. Reports have shown that symbolic coding tests can effectively assess cognitive function in a wide spectrum of schizophrenia patients [7-8]. Widespread cognitive impairments exist among the high risk schizophrenia group. High-risk research has revealed promising cognitive indicators of future development of psychosis in the context of generally normal function.

Future work needs to address the inconsistencies in intake criteria and to engage in longitudinal studies at predefined intervals. Furthermore, specific research hypotheses need to be generated to address core vulnerability markers, particularly those that involve parsing more complex cognitive processes into relatively discrete elements. Finally, as has historically occurred with symptom ratings, the use of cluster analysis and factor analytic techniques focusing on cognitive scores to characterize potential subgroups of subjects would be useful [9]. Cognitive profiles can then be more meaningfully associated with clinical profiles for the purpose of incorporating the same into inclusion criteria for clinical high risk for psychosis [10-11].

5. Conclusion

This study focused on cognitive function of schizophrenia patients. super dangerous crowd comparative analysis. Since most subjects in the super high-risk groups are not actively seeking medical treatment, the sample size is small, and patients cannot be tracked over a long period of time. In addition, although we conducted SIPS screening for super high risk groups, false positive cases cannot be ruled out. This makes research on prodromal stage schizophrenia particularly challenging.

Finally, This area is relatively new, and future research into the longitudinal development of psychosis is indicated as is an improved understanding

of the potential impact of different interventions. Although clearly limited by its sample size, this study raises stimulating questions in terms of future studies of psychological treatments for this population.

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