

Formal thought disorder in first-episode psychosis

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Abstract

Formal thought disorder (FTD) is one of the fundamental symptom clusters of schizophrenia and it was found to be the strongest predictor determining conversion from first-episode acute transient psychotic disorder to schizophrenia. Our goal in the present study was to compare a first-episode psychosis (FEP) sample to a healthy control group in relation to subtypes of FTD. Fifty six patients aged between 15 and 45 years with FEP and forty five control subjects were included in the study. All the patients were under medication for less than six weeks or drug-naïve. FTD was assessed using the Thought and Language Index (TLI), which is composed of impoverishment of thought and disorganization of thought subscales. FEP patients showed significantly higher scores on the items of poverty of speech, weakening of goal, perseveration, looseness, peculiar word use, peculiar sentence construction and peculiar logic compared to controls. Poverty of speech, perseveration and peculiar word use were the significant factors differentiating FEP patients from controls when controlling for years of education, family history of psychosis and drug abuse.

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1. Introduction

Formal thought disorder (FTD) is one of the fundamental symptom clusters of schizophrenia. Disorders of thought processes that are characterized by deficiency in organizing thought in a definite logical sequence for a certain goal are considered as FTD. Thomas and Frazer [1] defined FTD as multidimensional impairment including disorders in thought, language processing and social cognition.

Poverty of speech, poverty of content, pressure of speech, distractible speech, tangentiality, derailment, incoherence, illogicality, clanging, neologisms and word approximations were reported as more pathologic types of FTD [2]. Among types of FTD identified by Andreasen, derailment, loss of goal, poverty of content and tangentiality were stated to be the most frequently seen types in patients with schizophrenia [3].

FTD usually persists during the illness chronically in an attenuated form, yet it tends to deteriorate in acute episodes [4,5]. Antipsychotic treatment reduces thought pathology associated with acute episodes of schizophrenia [6].

Negative FTD, identified with poverty of speech and poverty in content of speech, remains stable over the course of schizophrenia [7]. It is associated with poor response to treatment [8] and schizophrenia patients having negative FTD are less likely to attain remission [7]. Positive FTD, determined by features like derailment, perseveration, circumstantiality, tangentiality, blocking and incoherence usually declines or disappears as the acute episode alleviates [7,9]. Patients with affective psychosis tend to have more explicit positive FTD in contrast to patients with schizophrenia who have more negative FTD [7]. Moreover, follow-up study of these patients indicated that patients with schizoaffective disorder and bipolar disorder with manic episode showed improvements in some subtypes of FTD over time, whereas patients with schizophrenia remained the same. The foremost determinant factor of this result was thought to be the existence of negative FTD present throughout schizophrenia [7].

FTD is reported to be highly heritable, being found in healthy relatives of patients with schizophrenia [10,11]. Specifically, deficiency in verbal fluency [12], peculiar word use [13], deviant verbalization [10], and grammatical oversimplification [4] are explicit in relatives of patients with schizophrenia compared to healthy controls. Moreover, adoption studies provide a basis for minimizing the

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confounding effects of genetic and environmental factors. Adoptees with schizophrenia tend to have significant FTD compared to control adoptees and, likewise, biological relatives of adoptees with schizophrenia show more FTD than biological relatives of control adoptees [4,14]. These results indicate that the genetic factors increase the liability for schizophrenia rather than the rearing experiences [14]. A previous genome-wide linkage analysis and whole-genome sequencing showed that impaired MEF2A activity and genetic variation in the region 6q26–27 may be biologically relevant high-risk factors for FTD in schizophrenia [15].

The aim of this study is to compare an FEP sample to a healthy control group in relation to subtypes of FTD.

2. Materials and methods

2.1. Participants

Fifty six patients aged between 15 and 45 years with FEP were recruited from the inpatient unit of Manisa Psychiatric Hospital, which is a public psychiatric hospital in Turkey. First-time admitted patients during their first acute phase of psychotic illness were screened and the ones that fulfilled our inclusion criteria were included in the study. A trained psychologist (EA) carried out the clinical assessments (SCID, PANSS, TLI, neurocognitive battery). Diagnosis was made based on SCID-I (Structured Clinical Interview for Diagnostic and Statistical Manual of Mental Disorders, 4th Edition (DSM-IV), Axis I Disorders). As part of the differential diagnosis, potential organic causes of psychosis were screened by routine laboratory tests and brain CT examination was applied to all patients at admittance. There were no patients with psychosis due to general medical conditions. Patients with affective psychosis were excluded. All the patients were under medication for less than six weeks or drug-naïve in order to restrain the risk of bias from medication effects. At the time of the assessment, 32 (57%) patients were taking atypical antipsychotics, 18 (33%) patients were taking combinations of atypical antipsychotics, 3 (5%) patients were taking combinations of atypical and typical antipsychotics and 3 (5%) patients were drug-naïve. Of the 56 patients, 22 (40%) patients received adjunctive anticholinergic agents (biperiden) for extrapyramidal side effects and 21 (38%) patients received adjunctive benzodiazepines (diazepam, lorazepam) for agitation. FEP patients having electroconvulsive treatment were excluded from the study as ECT might influence cognitive functioning and thought processes.

Forty five age- and gender-matched healthy subjects who had no previous history of mental, psychiatric and neurological disorders were included in the study as the control group. The recruitment of the controls also took place at the Manisa Psychiatric Hospital. The controls were recruited from hospital staff who had no relation to the patients. SCID-I was also administered to the control group to rule out any comorbid condition. The ones who were

taking medications for psychiatric, neurological or common medical diseases such as hypertension or diabetes at the time of assessment were excluded from the study.

Neurocognitive assessment, including executive function, verbal learning, verbal memory, visual memory, attention/vigilance, processing speed, verbal fluency, cognitive flexibility and working memory was performed on both the patient and the control groups in order to screen for conditions that might affect cognition or language.

A trained psychologist (SS) rated the TLI scores of the participants. All the participants were Turkish native-speaking. Written informed consents were attained from each participant at recruitment. The study was approved by the Ethics Committee of Dokuz Eylül University School of Medicine.

2.2. Measures

2.2.1. Formal thought disorder

2.2.1.1. The Thought and Language Index. The Thought and Language Index (TLI) was developed for assessing FTD under standardized conditions [16]. Participant is required to produce eight one-minute speech samples in response to the eight standard pictures taken from the Thematic Apperception Test (TAT) [17]. The two-factor structure of the Turkish version of TLI has a Cronbach alpha value of 0.75 with a high interrater and test–retest reliability [18]. It comprises impoverishment of thought and disorganization of thought subscales. Impoverishment of thought subscale consists of three items: Poverty of speech, weakening of goal and perseveration. Disorganization of thought subscale includes five items: Looseness, peculiar word use, peculiar sentence construction, peculiar logic and distractibility. The entire interview is recorded on audiotape and then transcribed. These transcribed speech samples are assessed according to the TLI manual. As to the TLI manual, a score of 0.25, 0.50, 0.75 or 1.0 is given to each TAT picture depending on the severity of FTD. For one picture, a score of 0.25 indicates that the abnormality is questionable. A score of 0.50 or above indicates that the abnormality is clear. The sum scores of the eight TAT pictures give the mean severity of each TLI item.

2.2.2. Psychiatric symptom assessment

2.2.2.1. The Positive and Negative Syndrome Scale. The Positive and Negative Syndrome Scale (PANSS) [19,20] was used to assess the symptom severity in FEP patients. PANSS includes Positive Symptoms Subscale, Negative Symptoms Subscale and General Psychopathology Subscale.

2.3. Statistical analyses

The Statistical Package for the Social Sciences (SPSS) version 15.0 for Windows was used for all the analyses. Due to the condition that our data were not normally distributed, the Mann–Whitney U nonparametric test was used to

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