Dynamics of Cognitive Anomalies in Patients with First Episodes of Juvenile Endogenous Psychosis

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The therapeutic dynamics of neuropsychological and neurophysiological markers of impairments to cognitive functions were studied in groups of patients with first episodes of juvenile endogenous psychosis (90 patients). At the initial stage of remission, subjects were found to show improvements in processes associated with voluntary regulation of cognitive functions (due to the activity of extensive networks of cortical and subcortical structures), while more automatic processes (associated mainly with the temporal areas of the brain) remained abnormal. Changes in neurocognitive anomalies during the onset of remission were also identified in groups of patients in whom episodes had different syndromal structures – catatonic, hallucinatory-delusional, and affective-delusional.

KEY WORDS: endogenous psychosis, first episode, juvenile age, neurocognitive anomalies, onset of remission, neuropsychology, evoked potentials, P300.

Studies of first episodes of endogenous psychoses (“first episodes”) are important because of the need for the timely initiation of appropriate treatment at the early stages of illness [3, 12, 21, 30] and the importance of investigating the bases of endogenous psychoses (first episodes are regarded as the optimum model for studying this aspect) [5, 20, 27]. The relevance of studies of first episodes in patients of juvenile age is also linked with the high incidence of manifestations of episodes of schizophrenia and schizoaffective psychosis at this age [13, 15, 22], especially in males [18, 24, 26, 28, 29].

Previous detailed clinical and psychopathological studies of a large cohort of 297 patients [4] led to the proposal of a clinical differentiation of first episodes of juvenile endogenous episodic psychoses in terms of the main psychopathological syndrome and the mechanism of formation of delusions. This classification defined three groups of psychoses: catatonic (episodes of lucid-catatonic and catatonic-hallucinatory-delusional structure), hallucinatory-delusional (with episodes dominated by acute systematized interpretative delusions, acute non-systematized integrative delusions, and verbal hallucinations, as well as mixed type, with interpretative and sensory delusions); and affective-delusional (episodes dominated by intellectual imaginary delusions, by visual imaginary delusions, or by perceptual delusions).

The present study addressed assessment of the validity of this terminology on the basis of analysis of cognitive impairments present in patients. The selection of cognitive functions as one of the main criteria for evaluating the patient’s state was defined by the role played by these anomalies in the pathogenesis of endogenous psychoses – their associations with genetic factors in the development of mental pathology and their correlations with patient’s clinical status and levels of social adaptation [1, 2, 7, 10, 14, 17, 19].

Our previous reports [9, 11, 23] showed that each of these clinical groups is also characterized by the structure of its cognitive disorders. Thus, the dominance of catatonic symptomatology is associated with the presence of anomalies of the premotor areas of the cortex in the profile of...
structural-functional impairments of cognitive functions. Here, the functional state of the parietal and occipital areas is virtually no different from that seen in mentally healthy people. The dominance of hallucinatory-delusional symptomatology correlates with “imperfections” primarily of the frontal-temporal areas. Groups of patients in whom dominance of the profile of the first episode of affective-delusional disorders is characterized by desynchronization of the activity of a wide spectrum of subcortical and limbic structures, have greater (than other groups) reductions in the stability of the neural substrate to prolonged and repeated stimuli.

Results approaching an understanding of the nature of the multifarious clinical features in the pattern of the first episode in endogenous psychoses raised a number of questions. Primarily, this applies to assessment of the dynamics of changes in the structures of neurocognitive abnormalities during the treatment of patients in clinical conditions. Analysis of the state of the patient’s neurocognitive sphere on the background of a significant reduction in psychopathological symptomatology and the onset of remission should allow cognitive abnormalities responding weakly to treatment to be identified and should be of value in identifying those which, on the one hand, can be regarded as “radical,” associated with the underlying mechanisms of development of endogenous psychoses and their nosological differentiation and, on the other, may be informative in terms of further therapeutic developments.

The aim of the present work was to identify the characteristics of anomalies of cognitive functions in patients with first episodes of juvenile endogenous psychoses with different psychopathological structures during treatment.

MATERIALS AND METHODS

The present study was performed at the Juvenile Mental Disorders Study Group (Director: Professor M. Ya. Tsutsul’kovskaya), Department of Endogenous Psychoses and Affective States, Scientific Center for Mental Health, Russian Academy of Medical Sciences (Director: Academician of the Russian Academy of Medical Sciences A. S. Tiganov) in collaboration with the Medical Psychology (Director: S. N. Enikolopov) and Neurophysiology (Director: Professor A. F. Iznak) Laboratories.

The study included 90 male patients with juvenile endogenous episodic psychosis (ICD-10 F20.03, F20.23, F25) (JEEP) hospitalized at the above clinic with first episodes.

Inclusion criteria for the study were onset of disease at adolescent-juvenile age, manifestations of endogenous psychosis at juvenile age (16–25 years), and presence of non-congruent affect in first episodes of psychotic disorders.

Exclusion criteria were the presence of marked productive disorders and/or negative personality changes at the initial stage of illness and the presence of concomitant mental, somatic, or neurological pathology which would hinder the study.

The control group consisted of 52 healthy subjects of the same age and gender as patients of the study group.

In accordance with the above classification of first episodes of juvenile endogenous psychoses [4], all patients were divided into three clinical groups: catatonic (group 1), hallucinatory-delusional (group 2), and affective-delusional (group 3).

Neuropsychological and neurophysiological investigations were performed during the first week after initial hospitalization in the clinic (in the presence of marked productive symptomatology) and before discharge from the clinic, i.e., on exit from acute psychosis at the initial stage of the onset of remission.

Neuropsychological investigations were performed in 90 patients, including 21 patients of group 1, 27 of group 2, and 42 of group 3. The second investigation was performed in these same groups of patients.

Neuropsychological studies used a complete set of methods developed by Luriya’s school.

Neuropsychological methods were directed to investigating auditory speech memory (a standard set of tests including learning five words by sound, two groups each of three words, two phrases, voluntary and involuntary remembering of stories, and their reproduction after interference). Visual memory was studied by presenting sequences of five figures, along with the Rey and Taylor test, which addresses both visual memory and optical-spatial gnosis, to supplement the Luriya scheme. Besides the Rey and Taylor test, studies of optical-spatial gnosis included independent drawing, copying of a drawing with an image, and copying of complex figures with rotation through 180°. Studies of tactile gnosis used a stereognosis test (recognition by touch of an object placed in the hand). Studies of visual gnosis included tests for recognition of realistic images of objects, and outline images of objects crossed out and superimposed on each other. Studies of nonverbal gnosis (tests for auditory-motor coordination) were performed by having the patients assess rhythmic structures by ear and reproducing them by example. Praxis was investigated using tests for postural praxis (the patient reproduced different finger positions following a visual image presented by the experimenter and transferred finger postures demonstrated by the experimenter to a specified position on the other hand without relying on vision), dynamic praxis (simultaneous substitution of the positions of both wrists in reciprocal relationships; tests using a motor program consisting of three substituting movements), spatial praxis (the patient reproduced a specified hand position following a visual example), and overall praxis (performance of simple motor reactions with selection of the movement corresponding to verbal instruction). Thinking was studied by asking the patient to describe subject cards, solve arithmeti-