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Characteristics of Cognitive Disorders in Schizophrenia and their Relation to the Social, Familial and Professional Adaptation Level

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Abstract

Schizophrenia has a prevalence of about 1% of the people over 45 years old, more than 75% of the cases having a chronic evolution with major impact on the patients' global functioning level and implicitly on their social-familial and professional integration. A focal point in the evolution of schizophrenia is the cognitive deficit. This research aims at recording in a non-interventional manner the link between the social-demographic characteristics, the severity degree of the disorder, the nature of the cerebral abnormalities, the global functioning level and the degree of the cognitive deterioration in schizophrenic patients. The study batch includes 80 patients with equal gender representation, between 45 and 65 years old, who underwent craniocerebral CT (computed tomography) and were applied GAF, CGI-S and MMSE scales in order to evaluate the aforementioned variables. The results show an obvious interconnection between the cognitive impairment, a weak social-familial insertion and a low global functionality. At the same time, the intensity of the cognitive deficit is correlated with the presence of cortical abnormalities, with a negative evolution of the disorder and a weak social support and low autonomy of the individual. The current paper is intended to set the ground for future research with the ultimate goal of designing adjusted means of integration and management of patients with schizophrenia and with cognitive deficit.

Keywords: cognitive deficit, schizophrenia, adaptive-integrative deficit, stigmatization, global functioning, social integration, family support

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Introduction

Schizophrenia is a major psychiatric disorder with incompletely explained multifactorial causation, polymorphic clinical presentation and chronic evolution in the vast majority of cases (Repoys, 2011). The issue of the cognitive deficit in schizophrenia has been raised since the beginnings of the conceptual definition of this nosologic entity, Kraepelin labeling its clinical picture as *Dementia Praecox*. Although spectacular results have been achieved in controlling the psychotic symptoms, there are still some difficulties and failures in the field of multidimensional rehabilitation of the schizophrenic patients. This makes the topic of the cognitive deficit in the disorders of the schizophrenic types, one of major importance and the subject of extensive research (Lesh *et al.*, 2011). Until now the cognitive deficit has not been a diagnostic criterion for schizophrenia, although the clinical picture and the evolution particularities are obviously correlated. The importance of understanding and adequate therapeutic management of cognitive impairment in schizophrenia is reflected in the relative lack of a unitary and efficient therapeutic approach on the functional status of the individual, despite the therapeutic success of the antipsychotics over the positive and negative symptoms specific to the schizophrenia spectrum (Edwards, Barch & Braver, 2010).

Theoretical Background

The cognitive functioning of schizophrenic patients is constantly affected in a moderate to severe manner, which represents a true vector for the familial and professional adaptive-integrative deficit with strong influence on these individuals' global functioning. This deficit reaches all the areas of human cognition, affecting the attention, the memory, the thinking process and its operationality (Cowan, 2010). In literature, there are three major approaches on the cognitive deficit in schizophrenia. One hypothesis states that the illness process manifests itself as cognitive deficit, thus drawing attention to its presence since the early stages of development and pleading for the existence of signs of cognitive deficit previous to the debut of the illness (Fornito *et al.*, 2011). However, there still is an ambiguity regarding the static or evolutional nature of this type of cognitive deficit. Another approach is towards the manifestation of cognitive deficit symptoms at the same time with the debut of psychotic symptoms, suggesting a more restrictive and self-limiting pattern (Cole *et al.*, 2011; Repovs, Csernansky & Barch, 2011). Finally, a third hypothesis asserts that the symptoms of cognitive deterioration can occur at the same time with the psychotic ones, but the progressive cognitive deterioration is associated with the evolution of the disorder, focusing primarily on attention, lucrative memory and the executive function (Gold *et al.*, 2010). Hypoprosexia is considered to be a fundamental cognitive

deficit in schizophrenia. Numerous studies show that the individuals genetically prone to schizophrenia have a lower ability of focusing attention even before the first psychotic episode (McClure *et al.*, 2010). Usually, at the moment of the disorder debut (the first psychotic episode) the prosexic deficit is already present, having most of the time moderate severity (Nuechterlein *et al.*, 2011). At the same time, there is some scientific evidence of the fact that the working memory dysfunction, especially the verbal one, is a central element of the alteration of the cognitive function in schizophrenia. In the same context, the verbal fluency is affected, with further difficulties in interpersonal communication. The executive functions imply the contribution of the cognitive functions that when functioning properly determine motivated, target oriented behavior (Hahn, 2010). Schizophrenics present a genuine lack of thinking flexibility, correlated with social and professional adaptive integrative difficulties. Concomitantly, the executive functions are indissolubly linked to the level of therapeutic compliance and the number of hospitalizations (Forbes, Carrick & Mcintosh, 2009).

The cognitive functioning is a fundamental component in building social abilities that are in turns essential for social competence and functioning (Mesholam-Gately *et al.*, 2009). The connection between the cognitive functioning and the social functioning indicates the face that the cognitive alteration is an important predictor for the outcome of schizophrenia, which refers to a series of fields that imply the acquisition and keeping of abilities needed for social, professional and community integration and adaptation (Cho, Konecky & Carter, 2006). Although we refer to schizophrenia as being a psychiatric disorder characterized by the occurrence of psycho-productive phenomena like hallucinations and deliriums under various forms, it is unquestionable that the cognitive deficit is a key element in the clinical evolution of schizophrenia (Barch & Carter, 2005). The research over the last three decades certify the fact that the cognitive functioning is one of the most critical determiners of the quality of life and global functioning in schizophrenic patients, with more invaliding potential than even the psychotic phenomena themselves (Barch *et al.*, 2009).

Cognition has been firmly established as a predictor of real-world community functioning as well as the ability to perform everyday living skills in assessment settings. Reductions in quality of life are strongly associated with cognitive impairment. The relationship between subjective experience and social functioning has been shown to be mediated by executive functioning. While cognitive impairment is a key component of reduced quality of life in schizophrenia, it is not the only factor as the severity of positive and negative symptoms is also a significant contributor (Wittchen *et al.*, 2011).

Research Objectives

Schizophrenia has a prevalence of 0.6 to 1% in people over 45, of which 75% present a chronic evolution of the disorder associated with cognitive deficit of various intensities and affecting different areas of cognition. The current paper aims at highlighting the connection between the clinical particularities, the social-demographic characteristics, the occurrence of cerebral abnormalities, the global functioning level and social well-being, the severity of the illness and the cognitive deficit level in patients diagnosed with schizophrenia. The challenge of understanding the cognitive deficit in schizophrenia lies in the fact that the people with this diagnosis present difficulties in all the areas of functioning. This study is aiming at highlighting a pattern of the nature and context of the cognitive deficit in schizophrenia, taking into account individuals with certain diagnosis in the area of schizophrenia with a long evolution of the illness, and also the effect that this biological and clinic pattern has on the development and progress of the patients and on his social, professional and family integration.

Materials and Methods

This research is naturalistic, non-interventional, made on a population of 80 patients, equally distributed in terms of gender (40 men and 40 women) diagnosed with schizophrenia according to ICD-10 criteria and at the same time corresponding to DSM IV TR criteria. These were selected as belonging to the 45 to 65 age interval, having a long evolution, with chronic illness (over 20 years since its debut). The subjects were selected from the patients of *Elisabeta Doamna* Hospital of Galati (Romania), between January 1st 2013 and December 31st 2014.

All the patients were involved in the study following their consent and according to the ethical norms of scientific research, this research being approved by the Ethic Committee of UMF Craiova. The selection criteria refer to the schizophrenia diagnosis set according to ICD-10 and the duration of the evolution of the illness over 20 years. The exclusion criteria were the occurrence of organic cerebral pathologies, dementia, mood disorders, addiction to alcohol or other psychoactive substances. For measuring the severity of the symptoms, the CGI-S (Clinical Global Illness Severity) scale was used offering a global evaluation of this aspect, taking into consideration the history of the illness, the psycho-social circumstances, behavior, symptoms and their influence on the patients' functioning. For the assessment of the subjects' global functioning, the GAF (Global Assessment of Functioning) scale, while for evaluating the level of the cognitive deficit the MMSE (Mini Mental Examination) scale was used. GAF is a scale of global assessment of functioning which coincides with the V axis of the system of multi-axial evaluation of DSM-IV, assessing the patient's psychological, social

and professional functioning. MMSE assesses the level of cognitive alteration taking into account the orientation, attention, short term memory and thinking operationality that is expressing and understanding written and spoken language and the calculating ability. The pathological changes at the cerebral level were assessed based on the images resulting from the Computed Tomography examinations of all the patients in the study.

Results and Discussions

The average age of the patients in the study is 54.32. 46.34% of them come from urban areas. The results show that 85.37% of them experience a lack of social relations, having a small relational circle, limited to their caretakers. Most of them are high-school graduates, 41.46%, a smaller number being university graduates (31.5%) or having attended only primary school or no school (27.04%). Out of the patients included in the research, 34.15% were institutionalized during the illness evolution.

As regarding the results of the MMSE tests, the average scores were 22.39± 2.60, being below the cut-off point values for mild cognitive impairment. The average scores for CGI-S were 4.10±0.86, which mean a moderate intensity of the symptomatology of the main illness. The GAF scores were 31.68±9.46 indicating a modest-precarious functioning of the patients in the research. As for the images from the CT exams, they show the presence of cortical atrophy in 82.5% of the cases. Almost all the patients included in research displayed the structural abnormalities cited by the literature, respectively the widening of the third ventricle and the lateral ventricle, elements of hypofrontality and affected temporal lobe. Also, the decrease in volume of the superior temporal gyrus was apparent in all the patients, as well as affected subcortical structures as the thalamus, the corpus callosum and the basal ganglia. Only 2 patients had a cerebral structure close to the normal limits. Only 29.27% of the patients were undergoing drug treatment with atypical antipsychotics (Risperidone, Olanzapine, Quetiapine, Aripiprazole) while the rest of them were receiving antipsychotics of the first generation (Haloperidol, Flupenthixol, Zuclopenthixol). There was a slightly differentiated response for the cognitive functioning as regarding gender, women having in general a more benign evolution and a level of social-familial integration and global functioning superior to that of men.

The hospitalized patients experience a higher level of cognitive impairment than that of the patients integrated in community, who implicitly have a superior global functioning. Also, the patients receiving treatment with atypical antipsychotics, a minority in the study batch, experience better cognitive performance than those under treatment with antipsychotics of the first generation. Thus, all the hospitalized patients included in the study are under pharmacologic therapy

with typical antipsychotics, registering on the GAF and CGI-s scale lower levels of global functioning and higher severity of the symptoms, as well as stronger cognitive decline comparing to the non-institutionalized patients receiving treatment with typical antipsychotics and especially comparing to the non-institutionalized patients undergoing atypical antipsychotics therapy.

Thus, in the light of the research results two extreme evolutional patterns can be defined as regarding the connection of cognitive disorders with the functional status and the severity of the illness, in relation with the pathological aspects of the craniocerebral CT and the category of antipsychotics used. One is represented by the institutionalized patients lacking systems of familial support, undergoing long duration treatment with typical antipsychotics with dramatically low global functioning, moderate/marked cognitive impairment and minimum potential for social reinsertion. On the other hand there are the patients who benefit from relatively good family support, with higher degree of autonomy, mild/average cognitive impairment, receiving treatment with atypical antipsychotics. The limits of the research refer to the relatively small number of patients and the restrictive age group considered, in the sense that in this way, the implications and particularities of the cognitive impairment occurring at the debut of the dissonant spectrum disorder or even before that are not studied. Also, it is important to mention that MMSE is not sensitive for Mild Cognitive Impairment, its usage to assess the cognitive deficit being another limit of the study. Also, it is easily observed the fact that cognitive impairment in schizophrenia patients that are already exposed to stigmatization is strongly related with a great decrease in their social and family integration. Often, the severe dysfunction leads to frequent institutionalization that, by itself, can aggravate the cognitive deficit of schizophrenia patients.

Conclusions

The intensity of the cognitive impairment in schizophrenia is correlated with the presence of the cortical atrophy and other cerebral abnormalities, as well as with unfavorable long evolution and administration of typical antipsychotics. The achieved data suggest a very low level of social-familial adaptive-integrative skills linked with the cognitive impairment in schizophrenia, the results following the current trend in research. The social functioning refers to those areas of behavior which imply interaction with other people, the level at which the individual function in society. The predictors of an impaired social functioning are related to the intensity of the cognitive disorders, the severity of the illness severity and the precariousness of the social-familial support systems.

Many times, social disability is linked with stigmatization, discrimination and exclusion for the psychiatric patients and especially the schizophrenic ones. This

is not static, though, but constitutes a dynamic process that can transform longitudinally. The results achieved in this research corroborated with the recent data in the field literature can represent the foundation for ampler research that can produce enough data needed to design proper means of support for patients with schizophrenia and progressive cognitive deterioration.

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