

INFLUENCE OF OLANZAPINE ON MEMORY FUNCTIONS

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SUMMARY

Even though memory dysfunction is not considered to be a diagnostic criterion for schizophrenia, results of a neuropsychological research indicate significant damage in mnemonic functioning, especially in verbal memory (Saykin et al. 1991). This type of a disorder is recorded in patients with a first episode of schizophrenia, as well as in chronic patients (Saykin et al. 1994). These researches show that this deficit is not influenced by neuroleptics. Paulsen and associates suggest that the deficit of verbal learning in schizophrenia is related to difficulties in encoding retrieving information without significant storage (rapid forgetting) problems (Paulsen et al. 1995). We will present a case of a 36 - year old male who is suffering from a paranoid schizophrenia.

Key words: *schizophrenia – olanzapine - memory functions*

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INTRODUCTION

Paranoid schizophrenia is a chronic mental illness. Psychopathology of the acute phase of this illness is the lesser problem in treatment - the bigger problem is the dysfunction of patients on different levels. This illness is also characterised by cognitive dysfunctions. It has been noticed that conventional and atypical antipsychotics influence neurocognition differently. Several studies have indicated advantages of using atypical antipsychotics in terms of improvement of neurocognitive functions (Lindenmayer et al. 2007).

CASE REPORT

22-year old student was hospitalised due to acute psychosis. He lived with his family (mother, stepfather and sister.) No information on developmental difficulties was registered. He was successfully educated.

The clinical feature developed over a period of six months before he was hospitalized (he isolated himself, did not communicate much, avoided leaving the house, was not able to study). He developed paranoid delusions (towards his stepfather) and auditive hallucinations. His

concentration, attention span and memory were considerably impaired. Due to all listed disturbances, the patient became dysfunctional and he left school.

Paranoid schizophrenia was diagnosed (F 20.0-DSM IV). Treatment started with a typical antipsychotic (promazine). During the following years he was admitted to a hospital 3 times (at the age of 29, 30 and 31). Other antipsychotics (fluphenazine, sulpirid) were used in his therapy. The patient was in a permanent clinical treatment. He never refused medications. Antipsychotics completely reduced delusions and hallucinations. He quit other forms of suggested treatment on several occasions (day-time stay in a hospital, group therapy). The process of group integration was aggravated. A stable remission has never been achieved.

Constantly present difficulties with concentration and memory presented a large impediment.

During his last hospital treatment clozapine was introduced. After six months of a stable dose of clozapine (300 mg per day), we have decided to monitor cognitive functions, which have been measured by Wechsler's memory scale (Wechsler et al. 1997).

1st measurement – September 2000, (clozapine 300mg)

Results indicated low speed of mental reactions without ability to reproduce logical material.

The learning curve was not accomplished; the patient did not have the capacity for retention and reproduction of logical material. The overall coefficient of mnesic functions was below average, taking into consideration the chronological age of the patient (WBms=80).

This value differentiates normal from abnormal mnesic functioning.

The following 4 years of the clozapine therapy (300mg) showed positive symptoms in remission, negative symptoms were still evident, and cognitive functions were disturbed. Treatment with olanzapine started in March 2004 (15 mg per day). During the first 6 months, better verbal fluency, improvement of concentration and attention were clinically observed. An improvement was detected in social functioning and functioning within the family. The patient was regularly monitored by an internist because of the possible side-effects.

2nd measurement – September 2004 (olanzapine 15mg)

The overall quotient of mnesic functioning demonstrated a discreet shift in comparison to the previous measurement. (WBms=84).

The ability to memorize has increased and that was especially evident in a subtest of mental control and visual retention.

3rd measurement – March 2005 (olanzapine 15mg)

Memory coefficient shows considerable growth to a normal level of functioning (WBms=103), which was particularly manifested in an increased ability to learn. Associative memory and visual retention were improved

4th measurement – September 2005 (olanzapine 15mg)

Compared to previous measurements, there is a significant difference in mnesic efficiency and the rate of mental activities. Coefficient of memory is still growing, reaching the level of upper average (WBms =108). The patient has a better ability to memorize and learn more quickly.

Table 1. Overview of results of patients on certain subtests of a Wechsler Memory Scale in four measurements

Subtest Wechsler-Memory Scale	September 2000.	September 2004.	March 2005.	September 2005.
Information	6	6	6	6
Orientation	5	5	5	5
Mental control	7	9	9	9
Digit span	12	12	13	12
Logical memory	2	2	4	4
Verbal paired association	9.5	6.5	13.5	10
Visual reproduction	6	9	11.5	11
Overall score WMS	80	84	103	108

DISCUSSION

The patient has been in a stable remission since September 2004, ever since he has been on a monotherapy of olanzapine (15mg per day). There are no evident symptoms of schizophrenia. Social functioning and cognition have improved. There are no evident side effects (weight gain and hyperglycemia).

Testing of memory functions indicates a continuous improvement of the overall coefficient of memory, as well as an improvement in subtests of associative memory and visual reproduction. All data mentioned are consistent with literature (Radziwillowicz P et al. 2002, Radziwillowicz W et al. 2002, McGurk et al. 2004, Morozova et al. 2008). During the olanzapine therapy on a schizophrenic patient over the period of two years,

coefficient of memory shifts from below average to the level of upper average.

COCLUSION

New researches indicate that clozapine and olanzapine equally affect cognitive functions; however, the presented case indicates an advantage of olanzapine over clozapine. This research provides a basis for future research which we plan to carry out on a larger number of schizophrenic patients.

REFERENCES

1. American Psychiatric Association: *Diagnostics and Statistical Manual of Mental Disorders. IV edition.* Washington DC: American Psychiatric Association, 1994.
2. Lindenmayer JP, Khan A, Iskander A, Abad MT, Parker B: *A randomized controlled trial of olanzapine versus haloperidol in the treatment of primary negative symptoms and neurocognitive deficits in schizophrenia.* *J Clin Psychiatry.* 2007; 68:368-79.
3. McGurk SR, Lee MA, Jayathilake K, Meltzer HY: *Cognitive effects of olanzapine treatment in schizophrenia.* *MedGenMed.* 2004; 10:6:27.
4. Morozova MA, Lepilkina TA, Rubashkina VV: *Changes in the relationship between cognitive functioning and psychopathological symptoms in patients with paranoid schizophrenia in the periods of psychosis and development of remission.* *Zh Nevrol Psikhiatr Im S S Korsakova.* 2008;108:4-12.
5. Paulsen JS, Heaton RK, Sadek JR, Perry W, Delis DC, Braff D, Kuck J, Zisook J&Jeste DV: *The nature of learning and memory impairments in schizophrenia.* *Journal of the International Neuropsychological Society* 1995; 1:88-99.
6. Radziwillowicz P, Radziwillowicz W, Lis J: *Effect of olanzapine treatment on cognitive functions in patients with schizophrenia.* *Psychiatr Pol.* 2002; 36: 967-987.
7. Radziwillowicz W, Radziwillowicz P: *Subjective and objective assesement of memory functions in patient with schizophrenia treated with olanzapine.* *Psychiatr Pol.* 2002; 36: 989-1002.
8. Saykin AJ, Gur RC, Gur RE, Mozley D, Mozley LH, Resnick SM, Kester B, & Stafiniak P: *Neuropsychological function in schizophrenia: Selective impairment in memory and learning.* *Arch Gen Psychiatry* 1991; 48:618-624.
9. Saykin AJ, Shtasel DL, Gur RE, Kester DB, Mozley LH, Stafiniak P & Gur RC: *Neuropsychological deficit in neuroleptic naive patients with first-episode schizophrenia.* *Arch Gen Psychiatry* 1994;51:124-131.
10. Wechsler D: *Wechsler Memory Scale-Third Edition.* San Antonio: TX: The Psychological Corporation: 1997.

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