

SEX-SPECIFIC DIFFERENCES IN COGNITIVE FUNCTIONING AMONG SCHIZOPHRENIC PATIENTS

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SUMMARY

Background: Cognitive deficits in schizophrenia are regarded by many psychiatrists as an important symptom, which requires appropriate treatment and rehabilitation. There are different conditions, which may have an influence on cognitive impairment in schizophrenic patients. One of the factors differentiating subgroups of schizophrenic patients when neuropsychological functioning is analyzed is sex.

Subjects and methods: This Review was focused on cognitive functioning of schizophrenic patients of different sexes. In order to achieve this result PubMed was searched using following terms: cognitive functions, schizophrenia, gender differences, sex hormones, memory, attention, neuropsychological, psychopathological symptoms.

Results: Most of the analyzed papers reflecting the cognitive differences between men and women suffering from schizophrenia postulate a worse performance in neuropsychological test by male patients. However according to some authors there are no gender differences in cognitive functioning in schizophrenic patients or those differences are not clinically significant.

Conclusions: The problem of sex-specific differences in cognitive functioning in patients in schizophrenia needs further investigation.

Key words: cognitive functioning – schizophrenia - gender differences

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INTRODUCTION

Cognitive deficits in schizophrenia are regarded by many psychiatrists as an important symptom, which requires appropriate treatment and rehabilitation (Green et al. 2005, Krysta et al. 2009, Waszkiewicz et al. 2012). According to the CATIE schizophrenia trial (Keefe et al. 2006) these neurocognitive changes are mild to moderate and are modestly related to negative symptoms. There are different factors which may have an influence on neuropsychological functioning by schizophrenic patients. One of them is medication. According to a number of studies atypical antipsychotic drugs are regarded as being superior to typical neuroleptics in terms of their impact of cognitive functions (Meltzer & McGurk 1999, Klasik et al. 2011, Wang et al. 2013). Other authors do not find a difference between typical and atypical neuroleptics in terms of their influence on cognition (Kucharska-Pietura et al. 2012). Another condition that may modify this domain in schizophrenia is drug abuse (Krysta et al. 2012, Wobrock et al. 2013). One of very important factor differentiating subgroups of schizophrenic patients when neuropsychological functioning is analyzed is sex. It has been observed that the association between cognitive impairment and poor cognitive insight may be sex-specific (Kao et al. 2013).

SUBJECTS AND METHODS

This Review was focused on cognitive functioning of schizophrenic patients of different sexes. In order to achieve this result PubMed was searched (effective date 30.06.2013). During our search we used following terms: (cognitive functions (Title/Abstract) OR schizophrenia (Title/Abstract)) AND gender differences (Title/Abstract) OR sex hormones OR memory OR attention OR neuropsychological OR psychopathological symptoms OR AND (humans (MeSH Terms) AND English (lang) AND (1995/01/01(PDAT): 2013/06/30(PDAT))).

RESULTS

Most of the papers reflecting the cognitive differences between men and women suffering from schizophrenia postulate a worse performance in neuropsychological tests by male patients. Goldstein et al. (1998) found that male schizophrenic patients presented more deficits in cognitive functioning comparing to female patients in such domains as attention, verbal memory, and executive functions. In the study performed by Vaskinn et al. (2001) an analysis of gender differences was done for patients with schizophrenia and bipolar disorder. In both clinical groups a better performance in cognitive assessment was observed in female patients. What was interesting

was that these gender differences in cognitive functioning did not correlate with social functioning. Voglmaier et al. (2005) examined patients with schizotypal personality disorder. They found fewer cognitive impairments in the female group, in which additionally, no deficits in verbal learning and abstraction were observed. Torniaainen et al. (2011) analyzed differences between men and women suffering from schizophrenia in terms of cognitive functions and cognitive features. The female patients had less negative symptoms and performed better in processing speed and episodic memory. However men were better in tasks related to visuospatial working memory. It was interesting that these sex differences were also present in the first-degree relatives of examined patients. Han et al. (2012) in their study found more serious cognitive deficits in men suffering from schizophrenia in such domains as immediate and delayed memory. However they did not differ from women in deficits of language, visuospatial memory and attention. Zhang et al. (2012) looked for gender differences in cognitive functioning between chronic and first-episode patients with schizophrenia. In chronic schizophrenic patients more gender differences were found referring to the age at onset, smoking, symptom severity, and cognitive function. The results were better for female patients. Fewer gender differences were observed in first-episode schizophrenia patients. In one of the recent studies Brébion et al. (2013), examined 88 schizophrenic patients finding sex-specific associations between anxiety, depression, negative symptoms and cognitive functions. There was a correlation between verbal recall and fluency and negative symptoms in men, and between verbal recall and fluency and attention in women. Another correlation was found between depression and verbal recall in women, and between anxiety and verbal recall in men. In our own report of three cases we reported about three schizophrenic patients with no cognitive deficits. It was interesting that all three patients we observed were women (Krysta et al. 2008). According to some papers there are no differences between cognitive functioning between men and women suffering from schizophrenia or those differences are not clinically significant. Albus et al. (1997) observed that female schizophrenic patients presented a lower impairment in tests of verbal memory and learning and male schizophrenic patients presented a lower impairment in spatial organization. They conclude that gender does not appear to modify markedly the cognitive impairment characteristic of schizophrenia. According to Bozikas et al. (2010) there is no difference in the degree of cognitive deficits between men and women suffering from schizophrenia. Those gender-related differences which are observed are also typical for healthy population. In the study performed by Gogos et al. (2010) no gender differences in cognitive functioning among patients suffering from schizophrenia and bipolar disorder were found. In some studies the

analysis is limited not only to neurocognitive evaluation, but also includes the analysis of serum hormone levels. Halari et al. (2004) in their study investigated the effects of serum levels of oestrogen, progesterone, testosterone and cortisol on neuropsychological functioning and psychopathology in schizophrenia. They found that oestrogen and age was co-related with lower intensity of positive symptom scores, and in the analysis of differences between men and women, cortisol was associated with poor performance on information processing in men. Moore et al. (2013) analyzed the correlation between hormone levels (testosterone, oestrogen, and prolactin), cognitive function and general symptoms of chronically ill male patients with schizophrenia or schizoaffective disorder. A correlation was found between circulating testosterone levels and the performance on verbal memory, processing speed, and working memory in examined subjects.

CONCLUSIONS

The above analysis shows that there are a number of studies, according to which differences between men and women among schizophrenic patients are present (Goldstein et al. 1998, Vaskinn et al. 2001, Voglmaier et al. 2005, Torniaainen et al. 2011, Han et al. 2012, Zhang et al. 2012, Brébion et al. 2013). However according to some authors there are no sex-specific differences in cognitive functioning subjects suffering from schizophrenia or those differences are not clinically significant (Albus et al. 1997, Bozikas et al. 2010, Gogos et al. 2010). The problem of gender differences in cognitive functioning among patients in schizophrenia needs further investigation.

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