

COGNITIVE CORRELATES IN PANIC DISORDER AS RELATED TO IMPULSIVITY - PRELIMINARY REPORT

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SUMMARY

Background: Impulsivity is the neurophysiologically based inability to confirm behaviour to its context or consequences. Overimpulsiveness characterizes many mental disorders and poses an important clinical dilemma. Although the relationship between mood disorders and impulsivity has been well studied the relationship between anxiety and impulsivity is controversial and not well explored. Some studies hypothesise that patients with the diagnosis of panic disorders are characterised by higher levels of impulsivity as a trait as compared to healthy individuals. The aim of this study was to assess cognitive correlates in panic disorder as related to impulsivity measures.

Material and methods: Within the preliminary studies four patients diagnosed with panic disorder (DSM-IV-TR) were studied. The severity measure was the Panic and Agoraphobia Scale. The experimental group comprised of psychotropic drug naïve patients. Impulsiveness was evaluated with the Barrat Impulsiveness Scale – 11th version (BIS-11). To assess cognitive functions we used CANTAB (Cambridge Neuropsychological Test Automated Battery).

Results: BIS-11 scores observed in the group of psychotropic drug naïve patients with panic disorder were higher than the adjusted average for the population and correlated with the number of mistakes in CANTAB (Spatial Working Memory Test); $r_s=0.949$; $p=0.0513$.

Conclusions: The preliminary findings indicate a correlation between impulsivity and cognitive deficits in panic disorder in psychotropic drug naïve patients.

Key words: panic disorder – impulsivity - cognitive functioning - BIS-11 - CANTAB

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INTRODUCTION

Anxiety disorders in general and panic disorder (PD) in particular seem to be considerably related with cognitive processing. Cognition is associated with complex mental activities involving acquisition, processing, storage and retrieval of information by means of cognitive functions including attention, learning, memory, verbal ability, visuospatial skill, logical thinking, and problem solving (Airaksinen et al. 2005). Thus, a person is unlikely to suffer from panic disorder without the ability of abstract thinking.

In anxiety disorders medial temporal and frontal lobe associated structures seem to be affected. A magnetic resonance study reported smaller temporal lobe volume, while PET studies show involvement of hippocampal and parahippocampal areas in PD patients (Airaksinen 2006). In patients with PD the fight or flight response is not adequately calibrated. Thus, changes in the body's internal homeostasis lead to altered synaptic transmission and increased firing of neurons in the locus coeruleus (Nutt & Ballenger 2003).

It seems interesting to assess cognitive stimuli processing as related to a person's impulsivity as this is the neurophysiologically based inability to confirm behaviour to its context or consequences. Overimpulsiveness characterizes numerous mental disorders. Higher BIS scores (Barrat Impulsiveness Scale) were associated with symptoms of cluster B personality

disorders, suicidal behaviour, early-life stressors (Garno et al. 2005). The relationship between impulsivity and mood disorders is well documented. Study data show that attention impulsivity was related to either depression or mania, motor impulsivity correlated to mania, nonplanning impulsivity was related to depression (Swann et al. 2008). The reports show that nonplanning impulsivity was increased in patients with personality disorders (Dougherty et al. 2000), attentional impulsivity was increased in patients with Axis I psychiatric disorders (Swann et al. 2002), motor impulsivity was increased in patients with bipolar disorder who also had impulse control disorders (Lejoyeux et al. 2002). The relationship between anxiety disorders and impulsivity is unclear. We hypothesized that patients diagnosed with panic disorders would have a higher level of impulsivity trait than healthy controls.

The goal of our study was to assess cognitive correlates in panic disorder as related to impulsivity.

SUBJECTS AND METHODS

We examined four psychotropic drug naïve patients with panic disorder recruited from the outpatient setting. The inclusion criteria were 18-60 years of age and the diagnosis of panic disorder (DSM-IV-TR) with SCID-I. The exclusion criteria were the presence of any chronic somatic illness, positive history of neurological disorders, substance abuse, concomitant medication with beta-

blockers, steroids, calcium channel blockers, triptans, and any positive history of psychotropic medication.

The severity of Panic Disorder was assessed with the Panic and Agoraphobia Scale (PAS). Learning, memory and executive function were measured using a selected subtest from the Cambridge Neuropsychological Test Automated Battery (CANTAB). This is a suite of computerised tests employing a touch-sensitive screen, which has been used to examine differential patterns of cognitive deficit in various patients (Owen 1997). Impulsiveness was evaluated with the Barrat Impulsiveness Scale, 11th version (BIS-11). BIS-11 is a 30-item self-rated scale. Items are rated from 1- absent to 4-most extreme (Swann et al. 2008). Non-psychiatric controls generally score in the range of 50-60 (Swann et al. 2002). It provides the measure of impulsivity within three dimensions: cognitive/attentional, motor and nonplanning.

The statistical analysis was performed using non parametrical Spearman's rank correlation test. All analysis were conducted with Statistica v.10.0 software.

The study protocol was approved by the local bioethics committee at the Medical University of Gdańsk.

RESULTS

As shown in Table 1 the BIS-11 general scores observed in the group of psychotropic drug naïve patients with panic disorder were higher than average (50-60) for the population normative data.

Those scores were also correlated with the number of mistakes in CANTAB (Spatial Working Memory Test).

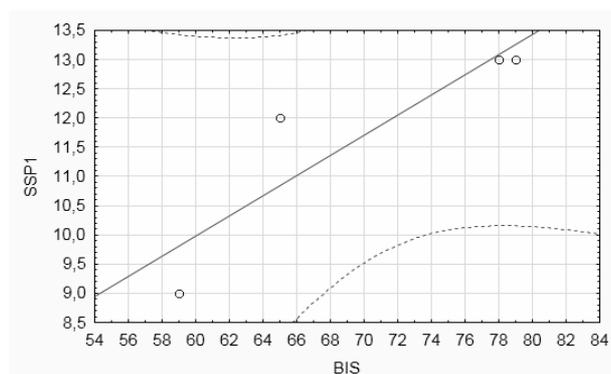


Figure 1. Correlation between amount of points on BIS-11 (Barrat Impulsiveness Scale, 11th version) and number of errors in spatial span test-SSP1 (CANTAB)

Table 1. Correlations between cognitive deficits (spatial span test-SSP1 (CANTAB)) and BIS-11 (Barrat Impulsiveness Scale, 11th version) scores in patients with Panic Disorder

SSP1	BIS General	BIS Attentional	BIS Motor	BIS Nonplanning
9	59	12	14	22
12	65	16	16	25
13	78	20	20	20
13	79	16	23	28

Correlation between amount of points on BIS-11 scale and number of errors in spatial span test is not significant yet ($r_s=0.949$; $p=0.0513$) but this may be caused by a small number of observations ($N=4$). There is a tendency that with an increasing number of observations and increasing statistical power we may observe significance and strength of correlation (Figure 1).

DISCUSSION

The relationship between anxiety disorders and cognitive function is not clear. The impact of anxiety on cognitive functioning is less explored than in other disorders (e.g. depression). The findings on cognitive functioning and impulsivity in anxiety disorders findings are inconsistent and are most likely due to methodological differences between the studies.

The impulsivity dimensions cover cognitive/ attentional, motor and nonplanning areas. Attentional impulsivity is a lack of cognitive persistence with the inability to tolerate cognitive complexity. Motor impulsivity is a tendency to act on the spur of the moment while nonplanning impulsivity refers to a lack of sense of the future (Grzesiak et al. 2008). Over-impulsiveness characterizes numerous mental disorders and seems to play a role in PD. Some studies have found significant cognitive dysfunction in PD (Cohen et al. 1996, Lucas et al. 1991, Boldrini et al. 2005, Asmundson et al. 1995). Other found no evidence for cognitive dysfunction between patients with PD (Gladsjo et al. 1998, Purcell et al. 1998). Furthermore, some studies found no correlation between anxiety and impulsivity (Apter 1993, Lecrubier 1995, Caci 1998, Askenazy 2000). However, in the exploratory studies by subtype in individuals with social anxiety disorder impulsivity related to a specific predisposition toward risk taking behaviours, impulsivity, relational and affective, interpersonal instability was higher as compared with the healthy controls (Kashdan & Hofmann 2008, Kashdan et al. 2009). In a study by Summerfeldt et al. (2004) patients with PD reported higher scores than healthy controls, in total, attentional, and not planning subscales of BIS-11 (Summerfeldt et al. 2004). It also seems the state and trait of impulsivity are higher in patients with anxiety disorders than healthy controls (Perugi et al. 2011). Thus, our findings corroborate prior reports of higher impulsivity traits among patients with anxiety disorders.

A serious limitation of our study is small sample size limiting the performed analyses.

CONCLUSIONS

The preliminary findings indicate the positive correlation between impulsivity and cognitive deficits in panic disorder in psychotropic drug naïve patients.

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Conflict of interest: None to declare.

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