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IMMEDIATE AND DELAYED VISUAL MEMORY AND RECOGNITION IN PATIENTS WITH PANIC DISORDERS

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SUMMARY

Background: *In Panic Disorder (PD) both somatic and cognitive symptoms occur. Cognitive functions which may be involved with anxiety and maladaptive cognition such as e.g. attention, memory and perception might be decreased.*

Material and methods: *Within the preliminary studies eleven patients diagnosed with panic disorder (DSM-IV-TR), and nine healthy controls were studied. The severity of disorder was measured by the Panic and Agoraphobia Scale. To assess working memory Delayed Match to Sample (DMS) with CANTAB (Cambridge Neuropsychological Test Automated Battery) was used.*

Results: *Percent of correct answers was significantly different in both groups in delayed visual memory and recognition test. In the control group results were higher (M=92.22) than in the experimental group (86.06).*

Conclusions: *PD is associated with impaired performance on a DMS task that requires the stable maintenance of representations in working memory.*

Key words: *DMS – CANTAB - panic disorders - cognitive functions - perception*

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INTRODUCTION

Cognitive (Clark 1986, Beck & Clark 1997) and learning theoretical models (Bouton et al. 2001) of Panic Disorder (PD) support a role for biased information-processing to threat-related stimuli in the aetiology and maintenance of the disorder. Although patients with PD show no deficits in general information processing (Kaplan et al. 2006) there is some evidence for biased executive functions, working memory and perception.

Differences exist regarding attention and information processing in unmedicated PD patients. For example, unmedicated patients with PD had slower reaction times on a divided attention dual-task paradigm, but did not make more errors than healthy controls (Lautenbacher et al. 2002). Additionally, selective attention was enhanced in unmedicated patients with PD and agoraphobia on a visual target discrimination task, while response inhibition was impaired (Dupont et al. 2000), suggesting the PD patients were less distracted than healthy controls by task-irrelevant visual stimuli. However, in unmedicated PD subjects no differences have been reported in the domains of psychomotor speed, visual recognition memory, and sustained attention (Asmundson et al. 1994, Gladsjo et al. 1998). Other cognitive domains have not been investigated to date in unmedicated PD patients. No evidence exists for the presence of deficits in the area of visual memory or executive functioning in medicated PD patients (Purcell et al. 1998, Gladsjo et al. 2001).

Given that working memory ability permits internal representations of information to guide decision-making and behaviour, impairments in working memory are likely to have important functional consequences for many higher-order processes including language, planning and goal-directed behaviour (Baddeley 2003). Its function may play a role in PD in scope of information processing capabilities.

Delayed Match to Sample (DMS) is a perceptual matching and immediate and delayed visual memory test. In DMS the subjects are presented complex visual pattern simultaneously, or after delays of 0, 4 or 12 seconds with three similar distractor patterns. The task is to choose thepattern that was presented. The test represents working memory functioning as an active process being under volitional control and prospective in timeline.

The aim of this study was to assess working memory with DMS in a sample of unmedicated and untreated participants with PD.

SUBJECTS AND METHODS

The study included adult drug naïve patients (N=11) recruited from the outpatient clinic, diagnosed with panic disorder (DSM-IV-TR) using SCID-I. Mean age (± SD) was 30.64 years (range, 20–41). 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. Control group (N=9) consisted of non-psychiatric adults comparable to the experimental group in age and gender. Mean age (± SD) was 28.22 years (range, 25–38).

The severity of Panic Disorder was assessed with the Panic and Agoraphobia Scale (PAS). Cognitive func-

tions such as memory, learning, attention and decision making were examined using Cambridge Neuropsychological Test Automated Battery (CANTAB; Cambridge Cognition, Cambridge, UK). CANTAB uses touch screen technology and most of tests do not involve language skills. Both groups performed DSM (Delayed Matching to Sample) test.

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

RESULTS

The statistical analysis was performed using non parametrical Mann-Whitney U-test. All analysis were conducted with Statistica v.10.0 software.

Mann-Whitney U-test indicates that groups differ significantly in delayed visual memory and recognition. (U=20; p=0.028). Percent of correct answers in all delays were significantly higher in the control group (M=92.22; SD3.73) than in the experimental group (M=86.06; SD6.11) (Figure 1).

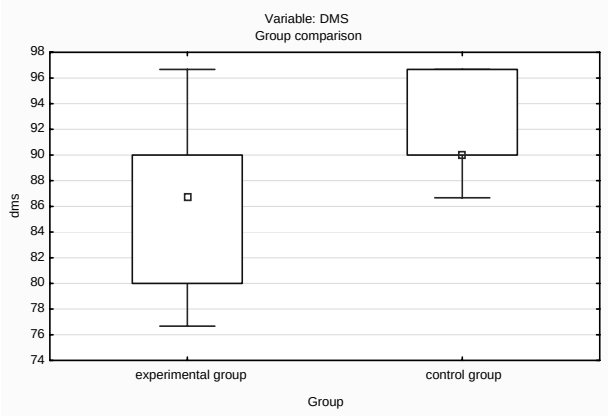

Figure 1. Comparison of percentage of correct answers between experimental and control group

DISCUSSION

The patients in the PD group are impaired on a task of visual memory, as measured by increased errors and slowed reaction times on the Delayed Match to Sample as related to healthy controls. These data suggest PD patients show visual discrimination and visual memory impairments.

However, the results from other studies were contradictory. Gladsjo et al. (1998) found no significant differences in learning and memory performance compared to healthy control group in a group of patients with 69 patients PD. Similar findings were reported by Kaplan et al. (2006) in a study with 22 PD patients. The study found no differences between PD patients and healthy controls in attention, memory and executive functions. Purcell et al. (1998) reported that patients with PD did not differ in accuracy and latency of executive, visual memory and attention functions.

The small size of our study sample limits concrete conclusions regarding the results which we observed for the working memory performance in PD. The study results refer to the well defined population of treatment-naïve PD patients and healthy subjects and the findings need to be replicated in a larger experimental sample.

CONCLUSION

Patients with PD might get lower scores than healthy participants in an immediate and delayed visual memory test.

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Conflict of interest: None to declare.

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