ORIGINAL ARTICLE

Panic disorder and dissociation – comparison with healthy controls

Petr Pastucha [1,3], **Jan Prasko** [2,3,4,5], **Ales Grambal** [2,3], **Klara Latalova** [2,3], **Zuzana Sigmundova** [2,3], **Tereza Sykorova** [2,3], **Anezka Tichackova** [2,3]

1 Outpatient Department of Psychiatry, Valašské Meziříčí, Czech Republic
2 Department of Psychiatry, University Hospital Olomouc, Czech Republic
3 Faculty of Medicine, University Palacky Olomouc, Czech Republic
4 Prague Psychiatric Centre, Prague, Czech Republic
5 Centre of Neuropsychiatric Studies, Prague, Czech Republic

Correspondence to: Assoc. Prof. Jan Prasko, MD., PhD.
Department of Psychiatry, University Hospital Olomouc
I. P. Pavlova 6, 77 52 Olomouc, Czech Republic.
E-MAIL: prasko@fnol.cz

Abstract

OBJECTIVE: According to recent findings, clinical symptoms of the patients suffering from panic disorder are related to dissociation. The aim of our study is to examine if the dissociation, can influence the intensity of psychopathology in patients suffering from panic disorder with or without agoraphobia and compare the levels of dissociation in the patients and healthy subjects.

METHODS: 41 patients suffering from panic disorder (70.1% females) and 66 healthy controls (77.3% females) were included in the study. The patients were psychiatrically assessed and the subjective intensity of symptoms was evaluated using Beck Anxiety Inventory and Beck Depression Inventory. All participants were assessed with the Dissociative Experiences Scale (DES).

RESULTS: The two groups didn't differ in demographic variables like age, gender and education. Level of the psychological dissociation assessed with the DES was correlated with the severity of subjective anxiety symptoms ($p<0.0001$), but not with the severity of depression symptoms. Patients did not have significantly higher mean score on the DES than healthy controls.

CONCLUSIONS: Our results suggest that the level of psychological dissociation in panic disorder patients is associated with the severity of anxiety but not depressive symptoms.

INTRODUCTION

Panic disorder is a severe and often disabling condition with a lifetime prevalence rate of 4.1% to 8.8% (Bandelow, 2003). More than one third of panic disorder patients have a chronic and/ or recurrent form of the disorder, accounting for much of the individual and societal cost associated with the illness. Several studies confirmed the close association between depressive symptoms and dissociation (Greenes *et al.* 1993, Lipsanen *et al.* 2004, Maaranen *et al.* 2005). Acute dissociation is associated with panic symptoms that occur during the traumatic experience (Bryant and

Panasetis, 2005). Also, depersonalization and derealization symptoms manifesting as manifestation of dissociation are frequent in anxiety disorders such as panic disorder, social phobia, posttraumatic stress disorder (Hunter *et al.* 2004). Episodes of depersonalization-derealisation are common in panic disorder (Cox and Swinson, 2002). The level of dissociation can be one of the reasons for treatment resistance in panic disorder patients (Ball *et al.* 1997, Segui *et al.* 2000, Gulsun *et al.* 2007), as well as in case of patients suffering with OCD (Praško *et al.* 2008, Raszka *et al.* 2008, and Raszka *et al.* 2009). Dissociative experiences are widespread among patients with panic disorder and have a negative impact on response to pharmacotherapy (Gulsun *et al.* 2007). Dissociation might be a negative predictor of treatment outcome in cognitive-behavioural therapy for patients with anxiety disorders (Spitzer *et al.* 2007).

Goals: The aim of our study is to examine if the dissociation is connected with the subjective severity of symptoms in patients suffering from panic disorder and if the intensity of dissociation differs from the healthy controls.

Hypothesis: We hypothesized that panic patients have suffered from higher levels of dissociation, than healthy controls, and the level of dissociation is associated with the subjectively experienced severity of anxiety and depression.

METHODS

Forty-one patients with panic disorder/agoraphobia and 66 healthy controls were included into the study.

Inclusion criteria

- ICD-10 research criteria for panic disorder/agoraphobia
- Age 17–70 years
- Male and female
- Exclusion criteria:
- Depressive disorder (ICD-10 criteria for depressive disorder)
- Organic psychiatric disorder
- Psychotic disorder in history
- Substance dependence
- Serious somatic disease

Assessment

Anxiety symptoms were evaluated with a self-administered 21-item scale – the Beck Anxiety Inventory (BAI; Beck *et al.* 1988). The level of depressive symptoms was rated using the self-administered 21-item Beck Depression Inventory-II (BDI-II; Beck *et al.* 1996). Psychological dissociative symptoms were examined using the Dissociative Experiences Scale (DES; Carlson & Putnam 1991; 1993). The DES is a self-administered 28-item inventory of psychological dissociation, where participants are asked to indicate on a visual analog scale how often they experience the dissociative symp-

toms (in percentage of time). The Czech version of the scale is comparable to the original version in terms of its test-retest reliability, validity and factor structure (Ptacek *et al.* 2007). Pathological DES was measured by a Dissociative Experiences Scale Taxon (DES-T) based on the items of DES number 3, 5, 7, 8, 12, 13, 22, 27 (Waller *et al.* 1996). These items measure identity alteration, depersonalization, derealization, discontinuation of awareness, dissociative amnesia, and auditory hallucinations.

Ethical issues

Investigation was carried out in accordance with the latest version of the Declaration of Helsinki and ICH-GCP guidelines (International Conference on Harmonization, Good Clinical Practice) (EMEA 1997). The local ethics committee approved the study and informal consent.

Participants

41 patients with panic disorder and/or agoraphobia between 17 and 69 years of age (70.1% females; mean age 36.54±11.55) from the Outpatient department Valašské Meziříčí and Psychiatric department of the University Hospital Olomouc Centre, were recruited for this study. All patients used psychotropic medication, mostly SSRIs. Sixty-six healthy controls (77.3% females) without any lifetime Axis I diagnosis were recruited through local advertisement. The controls were aged between 19 and 60 years (mean age 39.95±10.95 years). All participants signed an informed consent before entering the study. The mean scores in DES, pathological DES, BAI and BDI are described in Table 1.

Data analysis

Patient's demographic and baseline clinical characteristics were analysed using column statistics. Normal distribution of the demographic and clinical variables was determined by the Shapiro-Wilk W test, with exception of DES. Differences between patients with panic disorder and healthy controls were analyzed using t-tests for independent groups and the Mann-Whitney test. The relationships between variables with normal distribution (age, BDI, BAI,) were calculated using Pearson correlation analysis, while Spearman correlation was used for variables with non-normal distribution of DES. Linear regression with the DES score as dependent variable and gender, BDI, BAI scores as independent variables were carried out to identify the principal clinical variables which influence the severity of dissociative symptoms in panic disorder patients. The same analyses with DES score as dependent variable and gender, mental health status (panic disorder/control), as independent variables were performed to identify the principal clinical variables which influence dissociative symptoms in all participants. The level of significance was set at $p<0.05$. All analyses were conducted using STATISTICA 7.0 software.

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Tab. 1. Mean demographic and clinical variables.

Patients variable	age	gender	education	DES	pat-DES	BAI	BDI
Number of patients	41	41	41	41	41	41	41
Minimum	17	1	1	0	0	0	1
Maximum	69	2	3	117	26	53	32
Mean	36.54	1.707	2.146	21.45	3.061	25.02	15.41
Std. Deviation	11.55	0.4606	0.4775	25.52	5.236	13.7	8.809
Passed normality test	Yes	No	No	Yes	No	Yes	Yes
Controls variable	**age**	**gender**	**education**	**DES**	**pat-DES**		
Number of controls	66	66	66	66	66		
Minimum	19	1	1	0	0		
Maximum	60	2	3	58	20		
Mean	39.95	1.773	2.212	14.45	1.273		
Std. Deviation	10.95	0.4223	0.5119	13.6	2.861		
Passed normality test	Yes	No	No	No	No		

RESULTS

Sociodemographic and clinical variables and the frequency of dissociative experiences between panic disorder patients and healthy controls

Comparisons of the sociodemographic and clinical characteristics of panic disorder patients and controls are shown in Table 2. No significant age- and/or gender-specific differences were found between the groups. Patients had no higher mean score of DES than healthy controls (means: 21.45 ± 25.52 respective 14.45 ± 13.6; Mann Whitney test $p=0.53$); but they had more frequent severe dissociative states: 10 patients (10/41) and 4 of the healthy participants (4/66) scored higher than 30 on the DES scale, which is the cut-off point for severe dissociation (Fisher´s exact test; $p<0.05$).

Correlation analyses and linear regression in panic disorder group

Spearman correlations are presented in Table 3. Relatively strong associations between level of anxiety and DES scores were found. There were no correlation between DES or pathological DES scores and level of depression.

Psychological dissociation assessed with the DES was associated with the severity of anxiety symptoms (linear regression: $r^2=0.37$; F=23.06, DFd=39; $p<0.0001$), but not with the severity of depression symptoms (linear regression: $r^2=0.04$; F=1.63, DFd=39; $p=0.2087$).

Psychological dissociation assessed with the subscale pathological DES was associated with the severity of anxiety symptoms (linear regression: $r^2=0.19$; F=9.15, DFd=39; $p<0.005$), but not with the severity of depression symptoms (linear regression: $r^2=0.0054$; F=0.21, DFd=39; $p=0.6494$).

Tab. 2. Comparison of sociodemographic and clinical characteristics of subjects with panic disorder and healthy subjects.

	Panic disorder (n=41)	Controls (n=66)	Statistical significance
Age (years)	36.54 ± 11.55	39.95 ± 10.95	ns [2]
Gender: male/female	12/29	15/51	ns [1]
Education (basic/secondary/university)	2/31/8	3/46/17	ns [1]
DES (average)	21.45 ± 25.52	14.45 ± 13.6	ns [3]
DES higher than 30	10	4	$p<0.05$ [4]

Results are reported as account or mean ± SD.
Abbreviations: DES - Dissociative Experiences Scale,
ns - non significant, [1] - Pearson's chi-squared test, [2] - Unpaired t-test
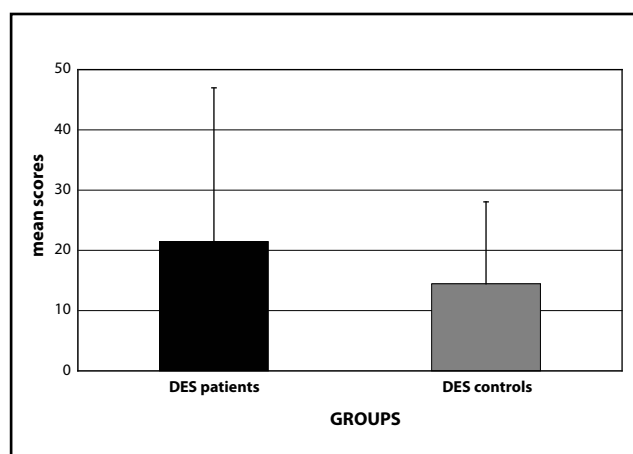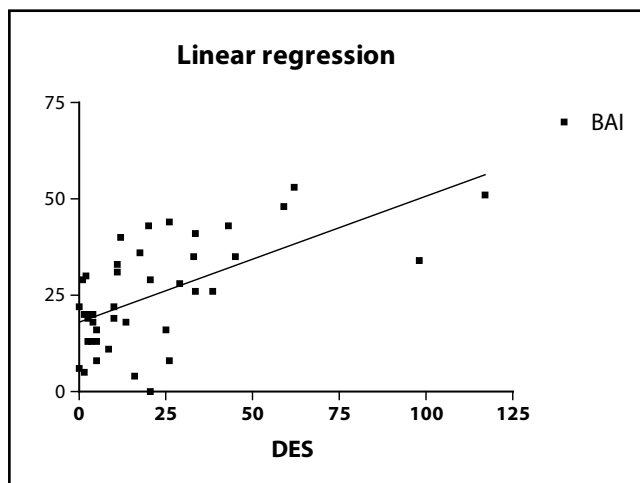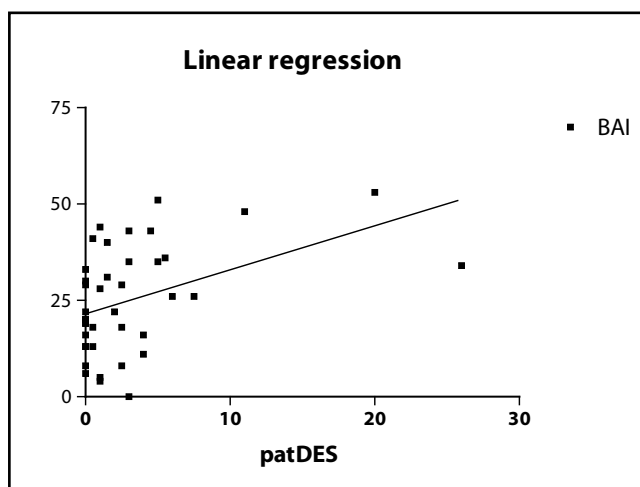[3] - Mann Whitney test, [4] - Fisher´s exact test

Fig. 1. Comparison of mean DES between patient and controls.

Tab. 3. Spearman's correlation coefficients between DES, pathological DES and BAI, BDI and age in panic disorder group.

	BAI	BDI	age
DES	0.5651 ***	0.2353	−0.1235
Pathological DES	0.4285 ***	0.0837	−0.1353

***$p<0.0001$

Fig. 2. Linear regression of mean DES and BAI.

Fig. 3. Linear regressions of pathological DES and BAI.

DISCUSSION

Psychological dissociation assessed with the DES scale correlated with the severity of subjective anxiety but not with the severity of subjective depressive symptoms. Patients were experiencing several psychological dissociative symptoms more frequently than healthy controls, but the mean DES scores did not significantly different. The evidence for high prevalence of depersonalization/derealization during life-threatening situations (Noyes *et al.* 1977), in panic disorder (Hunter *et al.* 2004) indi-

cates that dissociation is associated with anxiety states. It is believed that dissociation is a coping strategy to deal with anxiety states. The question whether dissociative states, like depersonalization and derealization, are components of anxiety or have to be understood as an independent construct is now discussed (Hunter *et al.* 2004, Raszka *et al.* 2009). Our results showed that dissociation is closely related to subjective anxiety in panic disorder patients.

There was no significant correlation between psychological dissociation and depressive symptoms. Stable high dissociation was associated with an increase in the BDI score in depressive patients and recovery from high dissociation was associated with a decline in the BDI score at 3-year follow-up (Maaranen *et al.* 2008). There was no correlation between subjective scores of depression and level of psychological dissociation in our patient suffering with panic disorder. This result could be explained with low levels of subjective depression in our patients.

Our study has substantial limitations that should be considered. To assess the level of dissociation, we used self-report questionnaires. Future research should corroborate these questionnaires with clinician-rated instruments. A further limitation of our study is in relatively small sample size, which made impossible the evaluation of different subgroups of panic disorder patients (with and without agoraphobia, with fear of death or madness, etc). Patients, in contrast to the controls, were medicated and possible side-effects could explain part of the differences between patients with panic disorder and healthy controls.

In conclusion, our findings show close relation of dissociative states with the level of anxiety in panic disorder. We need further research to explore the role of dissociation in other anxiety disorders and their relation to emotional regulation, biological factors and therapy outcome.

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REFERENCES

1 Ball S, Robinson A, Shekhar A, Walsh K (1997).Dissociative symptoms in panic disorder. J Nerv Ment Dis. **185**: 755–760.
2 Bandelow B (2003). Epidemiology of depression and anxiety. In: Kasper S, ed. Handbook on Depression and Anxiety. New York, NY: M. Dekker. 49–68
3 Beck AT, Steer RA, Ball R, Ranieri W (1996). Comparison of Beck Depression Inventories -IA and -II in psychiatric outpatients. J Pers Assess. **67**(3): 588–97.
4 Beck AT, Epstein N, Brown G, Steer RA (1988). An Inventory for Measuring Clinical Anxiety: Psychometric Properties. Journal of Consulting and Clinical Psychology. **56**(6): 893–97.
5 Bryant RA and Panasetis P (2005). The role of panic in acute dissociative reactions following trauma. Br J Clin Psychol. **44**: 489–494.

6 Carlson EB, Putnam FW, Ross CA, Anderson GG, Clark P, Torem Coons P, Bowman E, Chu JA, Dill D, Loewenstein RJ, and Braun BG (1991). Factor analysis of the Dissociative Experiences Scale: A multicenter study. In BG Braun & EB Carlson (Eds.). Proceedings of the Eighth International Conference on Multiple Personality and Dissociative States. Chicago: Rush.

7 Carlson EB, Putnam FW (1993). An update on the Dissociative Experience Scale: An update on the Dissociative. Dissociation. **6**: 16–27.

8 Cox BJ and Swinson RP (2002). Instrument to assess depersonalization-derealization in panic disorder. Depress Anxiety. **15**: 172–175.

9 Greenes D, Fava M, Cioffi J, Herzog DB (1993). The relationship of depression to dissociation in patients with bulimia nervosa. J Psychiatr Res. **27**(2): 133–37.

10 Gulsun M, Doruk A, Uzun O, Turkbay T, Ozsahin A (2007). Effect of dissociative experiences on drug treatment of panic disorder. Clin Drug Investig. **27**: 583–590.

11 Hunter EC, Sierra M, David AS (2004). The epidemiology of depersonalisation and derealisation. A systematic review. Soc Psychiatry Psychiatr Epidemiol. **39**(1): 9–18.

12 Lipsanen T, Saarijarvi S, Lauerma H. (2004). Exploring the relations between depression, somatization, dissociation and alexithymia--overlapping or independent constructs? Psychopathology. **37**(4): 200–206.

13 Maaranen P, Tanskanen A, Haatainen K *et al*. (2005). The relationship between psychological and somatoform dissociation in the general population. J Nerv Ment Dis. **193**(10): 690–692.

14 Maaranen P, Tanskanen A, Hintikka J *et al*. (2008). The course of dissociation in the general population: a 3-year follow-up study. Compr Psychiatry. **49**(3): 269–74.

15 Praško J, Raszka M, Adamcová K, Kudrnovská H, Kopřivová J, Vyskočilová J (2008). Predikce terapeutické odpovědi v kognitivní behaviorální terapii u pacientů s obsedantně kompulzivní poruchou rezistentní na léčbu psychofarmaky. [(Prediction of the therapeutic response in cognitive behavioral therapy in patients with obsessive compulsive disorder resistant to the treatment with psychopharmacs) (In Czech with English abstract)] Psychiatrie. **12**: (suppl 3): 55–62.

16 Ptacek R, Bob P, Paclt I *et al*. (2007). Psychobiology of dissociation and its clinical assessment. Neuroendocrinol Lett. **28**(2), 191–98.

17 Raszka M, Kopřivová J, Novák T, Adamcová K, Praško J (2009). Psychological dissociation in obsessive-compulsive disorder is associated with anxiety level but not with severity of obsessive-compulsive symptoms. Neuroendocrinol Lett. in press.

18 Raszka M, Praško J, Adamcová K, Kopřivová J, Vyskočilová J (2008). Disociace a kognitivní funkce u obsedantně-kompulzivní poruchy – průřezová studie. [(Dissociation and cognitive function in obsessive compulsive disorder – cross sectional study) (In Czech with English abstract)]. Česká a slovenská psychiatrie. **104**: 298–296.

19 Segui J, Marquez M, Garcia L, Canet J, Salvador-Carulla L, Ortiz M (2000). Depersonalization in panic disorder: a clinical study. Compr Psychiatry. **41**: 172–178.

20 Spitzer C, Barnow S, Freyberger HJ, Grabe HJ (2007): Dissociation predicts symptom-related treatment outcome in short-term inpatient psychotherapy. Aus N Z J Psychiatry. **41**: 682–687.