Peroxiredoxin 6 is downregulated in platelets of first-onset psychosis

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Introduction

Markers of oxidative stress have already been considered a reflection of protective balance and degenerative mechanisms in psychoses. Peroxiredoxins (PRDXs) are among the key enzymes that belong to the antioxidant protection system. From these, the bifunctional enzyme PRDX6 has both activities associated with SCZ physiology: peroxidase and phospholipase A2 activity and, thus, has turned into an interesting target for studies.

Figure 1. Both intracellular pathways for PRDX6 function

PRDX6 quantification

After 8h fasting, blood samples of all subjects were collected in EDTA-coated tubes. The expression of PRDX6 was determined in platelets of patients and controls by western blotting (figure 2).

Figure 2. Western blotting procedure

Objective

To determine the PRDX6 levels in first onset drug-naïve psychotic patients.

Material and Methods

Subjects

Table 1. Socio-demographic characteristics and clinical assessment

Diagnostic	Non-affective Psychotic (n=28)	Affective Psychotic (n=27)	Healthy Control (n=30)	p value
Gender (M/F)	17/11	5/22	16/14	0.03
Age (mean ± sd)	26.0 ± 7.4	28.9 ± 5.6	26.2 ± 3.9	0.12
Years of education (mean ± sd)	10.8 ± 3.5	13.7 ± 2.1	14.7 ± 2.3	0.01
PANSS scores				
Total (mean ± sd)	78 ± 22	-	-	
Positive (mean ± sd)	19 ± 5	-	-	
Negative (mean ± sd)	18 ± 8	-	-	
HAM-D (mean ± sd)	-	15 ± 8	-	
YMRS (mean ± sd)	-	9 ± 8	-	

M=male; F=female; sd=standard deviation; AD=Alzheimer Disease; MCI=Mild Cognitive impairment; MMSE=Mini-Mental State Examination; CAMCOG=Cambridge Cognitive Test; p=significance of Chi-square test. M: male; F: female; sd: standard deviation; SCZ: Schizophrenia; BD: Bipolar disorder; PANSS: Positive and Negative Syndrome Scale (PANSS); HAM-D: Hamilton rating scale for depression; YMRS: Young Mania Rating Scale. Bold values indicate significant p-values.

Results

Conclusions

- The role of PRDX6 in neuropsychiatry diseases may be controversial
- The binding of PRDX6 to different substrates regulates its peroxidase and iPLA2 activities
- In first onset psychosis antioxidant pathway is more prominent and informative in platelets