

increased VMHC in middle frontal gyrus (MFG) and caudate nucleus when compared remitted depression (RD) group to unremit- ted depression (URD) group. Meanwhile, when compared with NC group, the URD group presented reduced VMHC in bilateral cerebellum anterior lobe, thalamus and postcentral gyrus. Furthermore, the VMHC in media frontal gyrus, postcentral gyrus and precentral gyrus were significantly decreased in RD group. Correlation analysis suggested that reduced VMHC in bilateral pCu was negatively correlated with the baseline HAMD score of URD ($r = -0.325, P = 0.041$). Receiver operating characteristic (ROC) curve indicated that three regional VMHC changes could identify depressed patient with poorer treatment response: ITG [area under curve (AUC) = 0.699, $P = 0.002$, 95% CI = 0.586–0.812], MFG (AUC = 0.692, $P = 0.003$, 95% CI = 0.580–0.805), pCu (AUC = 0.714, $P = 0.001$, 95% CI = 0.603–0.825).

Conclusion The current study combined with previous evidence indicates that the subdued intrinsic interhemispheric functional connectivity might represents a novel neural trait involved in the pathophysiology of MDD.

Disclosure of interest The authors have not supplied their declaration of competing interest.

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FC45

Alteration in creatine phosphate behavior in excited visual cortex of early-stage schizophrenia patients measured by phosphorus magnetic resonance spectroscopy

A. Manzhurtsev^{1,*}, N. Semenova^{1,2,3}, M. Ublinskiy^{1,3}, T. Akhadov³, S. Varfolomeev¹, I. Lebedeva⁴, V. Kaleda⁴

¹ Emanuel Institute of Biochemical Physics of Russian Academy of Sciences, 501 Enzyme catalysis kinetics, Moscow, Russia

² Semenov Institute of Chemical Physics of Russian Academy of Sciences, 0404 Chemical and biological processes dynamics, Moscow, Russia

³ Research Institute of Children's Emergency Surgery and Trauma, Radiology, Moscow, Russia

⁴ Mental Health Research Center State Scientific Institution, Neurovisualisation and Multimodal Analysis, Moscow, Russia

* Corresponding author.

Introduction 31P MRS is a unique way of in vivo energy metabolism research. This method allowed revealing schizophrenia-induced disturbances of energy exchange in resting state [1]. We use 31P MRS in presence of visual stimulation that allows neuronal energy-consuming processes studying.

Objective Revealing of stimulation effects on high-energy phosphates (PCr, ATP) in early-stage schizophrenia.

Aim Discovery of energy processes contribution in schizophrenia pathogenesis.

Methods Twelve right-handed 18–26 years old male patients with early-staged schizophrenia (F20, ICD-10) and 20 age-matched healthy right-handed controls. Spectra were acquired on Philips Achieva 3.0 T using Rapid Biomed 31P/1H birdcage coil and 2D ISIS pulse sequence. fMRI was used for accurate 2D slice positioning, spectroscopy voxels containing primary visual cortex (V1) were averaged (see Fig. 1). Two 31P spectra of V1 were obtained: firstly in resting state and then during 6 minutes of continuous stimulation by 6 Hz flashing checkerboard. Spectra were processed in jMRUI.

Results Excitation reduced PCr in the norm and had no effect on schizophrenia (see Fig. 2). No excitation-induced ATP changes in both groups were revealed.

Conclusion Alteration in PCr behavior in this study witnesses for deviations in energy-consuming processes in schizophrenia. A new scheme of neuronal response to stimulation in schizophrenia is offered.

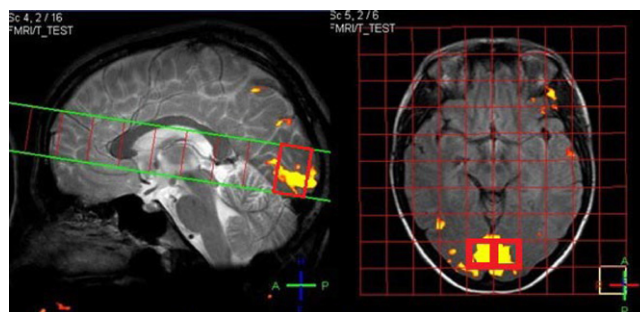


Fig. 1 fMRI-guided voxel positioning in visual cortex.

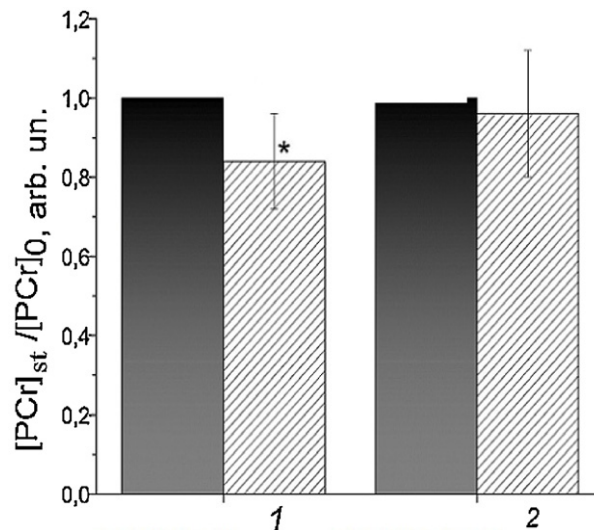


Fig. 2 PCr of visual cortex in the norm (1) and in schizophrenia (2) during continuous stimulation relative to PCr in resting state. * $P < 0.05$ by Mann-Whitney U-criteria.

Disclosure of interest The authors have not supplied their declaration of competing interest.

Reference

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FC46

Trimodal approach (PET/MR/EEG) of response inhibition as a possible biomarker for schizophrenia

C. Wyss^{1,*}, K. Heekeren¹, A. Del Guerra², N.J. Shah³, I. Neuner^{3,4}, K. Wolfram¹

¹ University Hospital of Psychiatry Zurich, Department for Psychiatry, Psychotherapy and Psychosomatics, Zurich, Switzerland

² University of Pisa, Department of Physics "E. Fermi", Pisa, Italy

³ Research Centre Jülich, Institute of Neuroscience and Medicine- INM-4, Jülich, Germany

⁴ RWTH Aachen University, Department of Psychiatry, Psychotherapy and Psychosomatics, Aachen, Germany

* Corresponding author.

Introduction The aim of the FP7-European funded project TRIM-AGE is to create a trimodal, cost-effective imaging tool consisting of PET/MR/EEG to enable effective early diagnosis of schizophrenia.

Objective In the scope of this project we are interested in the multimodal assessment of response inhibition. The loudness

dependence of auditory evoked potential (LDAEP) is a suitable biomarker of inhibitory action in signal processing. Variations in response inhibition can have great impact on different aspects of life. Individuals with reduced capability of inhibitory control have a tendency to impulsive behavior. Studies showed that they have stronger LDAEP values. Patients with schizophrenia may exhibit alterations in the responsiveness to sensory stimuli. Thus, a reduced LDAEP was found in these patients. However, these deviances differed in clinical features of the disorder. Therefore, we would like to further elucidate the relationship between multimodal neuroimaging methods and dimensions of symptoms, observable behavior, personality traits and general psychopathological dysfunction.

Methods A sample of 20 healthy controls and 20 patients with manifest schizophrenia will be examined with the LDAEP paradigm in a trimodal approach with customary imaging tools. PET measurements with the radiotracer [¹¹C]-flumazenil will be used to assess the binding potentials of GABA-A receptors. MRS will provide data about GABA concentrations. Simultaneously recorded EEG-fMRI data will permit new insight in the relationship between LDAEP and impulsivity.

Discussion The project will use alternative approaches to psychiatric classification. Response inhibition in sensory processing will be investigated from different angles (biochemical, neurophysiological, and neuroanatomical) and combined with psychological characteristic values.

Disclosure of interest The authors have not supplied their declaration of competing interest.

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Obsessive-compulsive disorder

FC48

Actions speak louder than words: Enhanced action tendencies in obsessive-compulsive disorder: An ERP study

A. Dayan Riva^{1,*}, A. Berger², G. Anholt²

¹ Beer Sheva, Israel

² Ben Gurion University of the Negev, Psychology, Beer Sheva, Israel

* Corresponding author.

Obsessive-compulsive disorder (OCD) is characterized by repeated thoughts and behaviors. Several studies have detected deficient response inhibition ability in individuals with OCD, leading researchers to suggest this deficit as an endophenotype of OCD. However, other researchers maintain that the effect size of this deficit is modest and that it lacks clinical significance. The current investigation examines a potential alternative explanation for difficulties in response inhibition, namely enhanced action tendencies in response to stimuli. Therefore, early processes of motor response preparation preceding action performance (or inhibition) were studied with the event-related potential (ERP) component of readiness potential (RP). RP measures brain reactions related to motor activity in response to external stimuli. ERPs were recorded while 15 participants with OCD and 16 healthy controls performed a variation of a go/no-go task and a stop-signal task using schematic faces (angry and neutral). The OCD group presented with a greater RP slope gradient and amplitude over bilateral parietal areas corresponding to the motor cortex. The amplitude effect was further enhanced under negative valence, compared with the neutral condition. Differences in RP between the OCD and control groups remained significant when controlling for levels of trait anxiety. Results support the hypothesis that a stronger readiness for action might characterize OCD, especially in the presence of threatening

stimuli. This finding, specific to OCD and not to anxiety symptoms, may underlie habitual tendencies in OCD. This study suggests that early-stages of motor preparation might be important to the etiology and maintenance of OCD.

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Pain and treatment options

FC49

The net suppression effect of pain catastrophic cognition on anxiety sensitivity

W. Wong^{1,*}, J. Lam², H. Lim³, S. Wong⁴, P. Chen⁵, Y. Chow⁴, R. Fielding⁶

¹ Hong Kong Institute of Education, Department of Special Education & Counseling, Hong Kong, China

² Hong Kong Institute of Education, Department of Psychological Studies, Hong Kong, China

³ United Christian Hospital, Department of Anesthesiology, Pain Medicine & Operating Services, Hong Kong, China

⁴ Queen Mary Hospital, Department of Anesthesiology & Operating Services, Hong Kong, China

⁵ Alice Ho Miu Ling Nethersole Hospital, Department of Anesthesiology & Operating Services, Hong Kong, China

⁶ University of Hong Kong, School of Public Health, Hong Kong, China

* Corresponding author.

Introduction The existing literature on chronic pain points to the effects anxiety sensitivity, pain hypervigilance, and pain catastrophizing on pain-related fear; however, the nature of the relationships remains unclear. The three dispositional factors may affect one another in the prediction of pain adjustment outcomes. The addition of one disposition may increase the association between another disposition and outcomes, a consequence known as suppressor effects in statistical terms.

Objective This study examined the possible statistical suppressor effects of anxiety sensitivity, pain hypervigilance and pain catastrophizing in predicting pain-related fear and adjustment outcomes (disability and depression).

Methods Chinese patients with chronic musculoskeletal pain ($n=401$) completed a battery of assessments on pain intensity, depression, anxiety sensitivity, pain vigilance, pain catastrophizing, and pain-related fear. Multiple regression analyses assessed the mediating/moderating role of pain hypervigilance. Structural equation modeling (SEM) was used to evaluate suppression effects.

Results Our results evidenced pain hypervigilance mediated the effects of anxiety sensitivity (Model 1: Sobel $z=4.86$) and pain catastrophizing (Model 3: Sobel $z=5.08$) on pain-related fear. Net suppression effect of pain catastrophizing on anxiety sensitivity was found in SEM where both anxiety sensitivity and pain catastrophizing were included in the same full model to predict disability (Model 9: CFI=0.95) and depression (Model 10: CFI=0.93) (all $P<0.001$) (see Tables 1 and 2, Figs. 1 and 2).

Conclusions Our findings evidenced that pain hypervigilance mediated the relationship of two dispositional factors, pain catastrophic cognition and anxiety sensitivity, with pain-related fear. The net suppression effects of pain catastrophizing suggest that anxiety sensitivity enhanced the effect of pain catastrophic cognition on pain hypervigilance.