

PW01-146 - NEURONAL CORRELATES OF WORKING MEMORY DEFICITS IN PATIENTS WITH SCHIZOPHRENIA AND THEIR RELATIVES

S. Karch¹, G. Leicht¹, I. Giegling¹, J. Lutz², J. Kunz¹, M. Buselmeier¹, P. Hey¹, L. Jäger², T. Meindl², O. Pogarell¹, U. Hegerl³, D. Rujescu¹, C. Mulert²

¹*Department of Psychiatry and Psychotherapy, ²Department of Radiology, Ludwig-Maximilians University Munich, Munich, ³Department of Psychiatry, University of Leipzig, Leipzig, Germany*

Studies of schizophrenia with functional MRI showed hyper- and hypoactivations in various brain regions including the prefrontal cortex. Functional abnormalities have also been reported in first-degree relatives of schizophrenic patients. The aim of this study was to examine working memory related brain functions in healthy subjects, schizophrenic patients and unaffected relatives and to determine the influence of psychopathology on these processes.

A parametric n-back working memory task and functional MRI were used to examine 61 schizophrenic patients on antipsychotic medication, 11 nonpsychotic relatives of schizophrenic patients and a comparison group of 61 healthy subjects. The task difficulty was incrementally increased using a parametric task (0-back, 1-back, 2-back, and 3-back) to examine the relationship between working memory load, performance, and brain activity.

The results indicated that during the attention task (0-back) behavioral responses of patients and healthy subjects hardly differed but BOLD responses were considerably enhanced in schizophrenic patients. With increasing task difficulty differences between groups in BOLD responses diminished whereas behavioral deficits of patients increased. The examination of attention-independent working memory-functions (2- vs. 0-back) produced hypoactivations in patients, especially in frontal, temporal and subcortical brain regions. Behavioral performance and neural responses of unaffected relatives of schizophrenic patients were intermediate between schizophrenic patients and controls indicating slight brain dysfunctions. In addition, compensatory strategies were demonstrated.

These findings suggest that the genetic risk for schizophrenia is accompanied by neural inefficiency which is associated with cognitive deficits, especially in difficult tasks.