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RECOVERY OF CORTICAL FUNCTIONING IN ABSTINENT ALCOHOL DEPENDENT PATIENTS? PREFRONTAL BRAIN OXYGENATION DURING VERBAL FLUENCY AT DIFFERENT PHASES DURING WITHDRAWAL

T. Dresler[1], M. Schecklmann[2], L.H. Ernst[3], C. Pohla[1], B. Warrings[1], M. Fischer[1], T. Polak[1], A.J. Fallgatter[3]

[1]Department of Psychiatry, Psychosomatics and Psychotherapy, University Hospital Wuerzburg, Wuerzburg, [2]Department of Psychiatry, Psychosomatics and Psychotherapy, University of Regensburg, Regensburg, [3]Department of Psychiatry and Psychotherapy, University of Tuebingen, Tuebingen, Germany

Introduction/objectives: Neurotoxic effects of alcohol consumption are well-known. There is plenty of literature on frontal lobe impairment on the behavioral and structural brain imaging level. However, only few functional imaging studies investigated altered neural patterns and even less abstinence-related neural recovery. Here, we investigated if frontal lobe activity tends to normalize in patients that remain successfully abstinent.

Methods: In a cross-sectional design three patient groups (acute withdrawal, detoxified, abstinent) and healthy controls (each n = 20) performed a phonological and semantical verbal fluency task (VFT) while brain activity was measured with near-infrared spectroscopy (NIRS).

Results: First, for the phonological condition patients in the acute withdrawal phase and also detoxified patients showed less fluency-related frontal lobe activation compared to controls despite equal performance. Second, significant linear trend effects from withdrawal patients over detoxified and abstinent patients up to healthy controls indicated more normal activation patterns in the abstinent group that did not differ from the controls. In the detoxified group brain activation increased with time since detoxification.

Conclusions: Our results support the assumption of an increase in frontal brain activity from alcohol dependency over abstinence up to normal functioning. Longitudinal studies are needed to further elucidate recovery processes in alcohol dependency.

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