

**014 THE IMPACT OF EPILEPSY ON COGNITIVE FUNCTION**

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Current position and activities: Head of the section of clinical neuropsychology of the department of Epileptology, University Clinic Bonn, Germany. The major work focuses on declarative verbal and visual-spatial memory and functional plasticity in healthy subjects and epilepsy patients with temporal lobe epilepsy across the ages with special consideration of developmental neuropsychology in the maturing (developmental hindrance) and ageing (accelerated decline) brain. Other issues of interest are the frontal lobes and executive functions, cerebral functional organisation, and the development of assessment tools. The clinical work focuses on neuropsychological and behavioural monitoring and outcome control of the course of epilepsy and its medical, invasive, semi-invasive and psychological treatment. The work is linked to groups doing structural and functional imaging, surface and intracranial EEG and network analyses, neuropathology, and more recently also genetics.

Cognitive problems and behavioral in epilepsy are frequent if they are not the rule. They can have multiple causes, the most important being brain lesions, seizures, epileptic dysfunction, and treatment. Whereas problems originating from lesions are mostly static and irreversible, problems associated with seizures and treatment are more dynamic and generally reversible. However, persisting problems can be the result of active epilepsy

or treatment interfering with critical phases of brain development. Under certain individual conditions chronic and more severe epilepsy can cause mental decline. In the majority of patients this is, however, not the case. Now there is increasing evidence that cognitive problems often exist from the beginning of the disease. Mental decline thus results from synergistic effects between initial and later acquired lesions and mental aging rather than from seizures progressively damaging the brain.

This calls for neuropsychological evaluation and countermeasures early in the course of epilepsy. Antiepileptic drug treatment can have positive as well as negative effects on cognition. In chronic epilepsy the patient's focus shifts from seizure control to the side effects of treatment and comorbidities. Thus, therapy, and polytherapy in particular, need to take the cognitive side effects of antiepileptic drugs into consideration. Repeated application of subjective questionnaires and short screening tests can be helpful. In pharmaco-resistant focal epilepsy, surgery can be a successful treatment option. However, surgery and other invasive treatments can cause additional impairments, which on the other hand can be reduced by selective and individual approaches, which aim at the preservation of functional tissues. The longer term cognitive outcomes after surgery appear very promising, particularly when patients become seizure free. Respective findings suggest a reconsideration of the negative impact of interictal epileptic dysfunction on cognition.