

Bridging the Validation Gap in Diagnostic Methods — Future Plans of the Commission on Diagnostic Methods

Ingmar Blümcke, Diagnostic Methods Commission Chair

Our Commission covers major diagnostic modalities to clinically characterize a patient's epilepsy, namely electro-/neurophysiology, neuropsychology, imaging and neuropathology measures. Our objective is to provide standardized protocols, terminology use and guidelines for an cost-effective diagnosis of epilepsy and their related comorbidities as well as consensus classification systems for underlying etiologies. We have set up four Task Forces to achieve this goal, and to bridge the validation gap of increasingly available technologies in the community of clinical epileptology.

Consensus terminology use, protocols, and guidelines for minimum requirements to apply neurophysiology meas-



Ingmar Blümcke

ures are a major topic for our Commission (Task Force for Neurophysiology, Chaired by Philippe Kahane, Grenoble, France). Increased interest for invasive EEG methodologies also requires practice parameters or criteria that determine clinical indications for intracranial EEG monitoring and will be shared with the ILAE community. However invasive EEG recordings are increasingly used in patients with "MRI-negative" focal epilepsies. This term needs a better definition to allow comparison between different centers and published patient series (Task Force for Neuroimaging, Chaired by Andrea Bernasconi, Montreal, Canada). Our Commission follows the strategy to validate any new definition using a pathology-based approach and consensus classification systems. Good examples are our recent Focal Cortical Dysplasia and Hippocampal Sclerosis classification systems proposed by the Commission in 2011 and 2013.

Our next term's challenge in Neuropathology addresses tumor-related epilepsies (Task Force for Neuropathology, Chaired by Ingmar Blümcke, Erlangen, Germany). Neuropathology agreement studies have shown dramatic inter-rater variance in the classification of these specific group of

brain tumors associated with long-term epilepsies (LEAT). LEATs mostly encompass glio-neuronal tumors, i.e. gangliogliomas (GG) and Dysembryoplastic Neuroepithelial Tumors (DNT) (approx. 60-80%). Despite their histopathologic definition in the WHO classification of brain tumors (2007), the frequency of DNT and GG vary largely between individual case series. We have built a collaborative virtual microscopy platform, which allows us to review unlimited series of LEAT variants by a panel of international neuropathologists and to encourage discussion between WHO, Intl. Neuropathology, and ILAE communities to achieve consensus terminology use and acceptance of a revised tumor classification system.

An important aspect of our Commission's work will address neuropsychology measures during presurgical evaluation to be understandable for epileptologists when using or interpreting different test domains (Task Force for Neuropsychology chaired by Sarah Wilson, Melbourne, Australia). Particular topics will address measures for assessment of developmental hindrance, measures sensitive to antiepileptic drug treatment or sensitive to EEG pathol-

ogy (electrophysiological epileptic activity, single spikes & spikewaves, grouped activity, nonconvulsive (cognitive) seizures). Consensus protocols for assessment of hemispheric dominance (IAT, fMRI, functional Doppler, dichotic listening), measures sensitive to surgical treatment, and measures and markers for assessing every day functioning are other important topics of this Task Force.

Our work will very much depend on interaction with other ILAE Commissions, dissemination and training. All Task Force members are actively engaged in setting up

training facilities, such as the new International Summer School for Neuropathology and Epilepsy Surgery (INES), first held in 2013 in Erlangen, Germany under the auspices of CEA-ILAE. INES. This course will make available an advanced microscopy training facility for the diagnostic evaluation of surgical specimens, with particular emphasis on mTLE-HS, epilepsy-associated tumors, cortical dysplasias, vascular malformations, and encephalitis. It will help to disseminate new and up-coming clinico-pathologic classification systems among the neuro / pathology communities

as well as validate existing and up-coming consensus classification systems by a larger cohort of practicing neuro-/pathologists. The successful launch of INES in Erlangen 2013 with more than 70 applications from 29 different countries was encouraging.

Commission Members: Ingmar Blümcke, Chair, Fernando Cendes, Andrea Bernasconi, Philippe Kahane, Callixte Kuate Tegueu, Riki Matsumoto, Donald Schomer, Sarah Wilson, and Sam Wiebe, MC Liaiso.