Joint Symposium 10
Neuroimaging Committee / International League Against Epilepsy (ILAE)
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Session Title
PET/MR in Epilepsy

Chairperson
Tatjana Traub-Weidinger (Vienna, Austria)

Programme
10 min  Introduction by Paolo Federico (Calgary, Canada / ILAE)
25 min  Anna Elisabetta Vaudano (Modena, Italy / ILAE): Epilepsy - The Role of MRI in Patients with Focal Epilepsy
25 min  Eric Guedj (Marseille, France): Epilepsy - The Role of FDG-PET and FDG-PET/MR in Patients with Focal Epilepsy
25 min  Alexander Hammers (London, United Kingdom): Is FDG the Only PET Tracer Useful for Patients with Epilepsy?
5 min   Session Summary by Chairperson

Educational Objectives
1. What is the role of PET in patients with focal epilepsy
2. How MR and PET would be used in patients with medically refractory epilepsy
3. What is the future of PET and PET/MR in patients with epilepsy

Summary
Brain imaging is very helpful in the pre-surgical evaluation of temporal lobe epilepsy and of extra-temporal lobe epilepsy. Almost 25% of patients with epilepsy develop refractory seizures, i.e., not responding to multiple anti-seizure drugs. In these patients, focal epilepsy is the most common type of epilepsy and is one of the major prognostic factor for difficult-to-control seizures. MRI demonstrated focal lesions in a high percentage of adult patients with focal epilepsy, but MRI could also be normal or non-contributory in approximately 30% of patients with refractory epilepsy. One of the reasons could be the high percentage of brain cortical malformations, such as cortical dysplasia, which may be subtle and undetected by MRI. In these patients with medically refractory epilepsy, surgical removal of the epileptogenic area is a treatment of choice and needs a precise localization of the epileptogenic area that has to be removed.

Imaging techniques such as ictal SPECT, interictal PET, and high-resolution MRI are very useful tools in localizing areas of focal brain abnormalities that are related to the epileptogenic area. More recently PET/MR has been used for these patients. The value of PET/MR will be discussed, as well as the respective role of PET using FDG, and other PET tracers.

Key Words
MRI, PET, epilepsy, surgery