

## **Epilepsy in Inborn Errors of Metabolism**

**Dr. Angela Garcia-Cazorla**

Department of Neurology

Neurometabolic Unit and Synaptic Metabolism Laboratory

Institut Pediatric de Recerca

Hospital Sant Joan de Deu, Barcelona, Spain

Seizures and epilepsy are frequent symptoms in inborn errors of metabolism (IEM). Many IEM interfere with important functions of brain metabolism such as the utilization of energy substrates, the metabolic coupling between neurons and astrocytes, the neurotransmitter turnover and signaling pathways, and the transport of substrates across the blood/brain barrier. These functions are involved in the regulation of excitatory/inhibitory balance and the way that brain circuits interact leading to epilepsy. However, although seizures are a very common sign of the “hyperexcitable” brain, only some IEM can cause epilepsy and epileptic syndromes as the predominant (leading) sign in the clinical manifestations.

These epilepsies can present across the life span, in most cases are refractory to anti-epileptic drugs, and very often do not present as an isolated symptom but associated with developmental delay, intellectual disability, behavioral abnormalities and neurological regression. Some of these disorders are treatable and they have to be considered in first place in the differential diagnosis of epileptic syndromes of unknown origin.

In this talk, we will focus on those IEM that present with epilepsy as a major clinical sign, how the onset-age determines what kind of disease and associated symptoms are present, what are the main biological mechanisms that cause epilepsy in IEM, and practical algorithms in the diagnosis and treatment.