

Preface

There is a very high incidence of seizures during the first two years of life. This may reflect multiple etiologies depending on the circumstances under which seizures occur; sometimes but not always seizures may lead to or herald epilepsy. In the immediate neonatal period, seizures can occur in the presence of provoked insults such as hypoxia ischemia, vascular events, traumatic injury changes in the extracellular milieu including toxic metabolic causes and drug withdrawal, as well as infections. Genetics may play an important role in the expression of acute seizures but also in the development of epilepsy later on. Genetic abnormalities may also give rise to brain dysplasias.

Within the first two years of life there is the frequent onset of difficult to control epilepsy with often devastating consequences (*i.e.* West syndrome or Dravet syndrome), although on other occasions the epileptic syndromes may have a more benign cause (*i.e.* benign familial neonatal seizures).

Ongoing efforts are to understand how seizures may occur in the developing brain, their consequences, the development of biomarkers, and effective treatments to promptly stop ongoing seizures and alter the course of epileptic encephalopathies. The simplistic view that seizures in the immature brain occur because of increased excitation and decreased inhibition is no longer pertinent as multiple age-specific (and also sex-specific) factors are intertwined, including changes in the conformation or function of channels, regional variability in the expression of various neurotransmitters and patterns of connectivity among these regions.

The topics presented in this volume address the questions raised above, and provide new insights on how it is best to approach seizures and epilepsy in the first two years of life, to systematically create a blueprint upon which diagnostic and treatment decisions can be based. The data are highly reflecting the state of the art and also individualize for the particular milieu of the patient in taking into account both nature (*i.e.* genetics), and nurture (*i.e.* events that may interfere with normal development) and result in seizures and epilepsy.

We would like to thank the authors for their keen observations, which help move forward the field.

Solomon L. Moshé and Alexis Arzimanoglou