

Introduction

The occurrence of an acute seizure in a child can take place in a number of settings. The situation that causes the highest degree of anxiety in parents is typically the first seizure, even though the probability of it representing an acute reactive seizure due to fever or metabolic derangements caused by an acute illness or the presentation of a benign childhood epilepsy syndrome is quite high. The former is more likely to be seen in the emergency department while the latter may just as commonly be seen in the clinic by the pediatrician and be referred to a pediatric neurologist. Acute reactive seizures are also commonly encountered in the critical care unit of tertiary hospitals, where seizures may occur in the setting of anoxia, circulatory failure, complications of hepatic or renal disease, or a sentinel symptom of medication-related toxicity. Management of acute seizures is also part of the life of the family burdened with a child suffering from treatment-resistant, often symptomatic, epilepsies. Each of these situations is attended to by a range of healthcare personnel, depending on the situation and the availability of skilled personnel. A comprehensive understanding of the nature of such a situation contributes to rapid diagnosis, expert management, improved outcome, and helps redirect the attention of physicians to addressing the primary medical problem in an expeditious manner.

Our goal in compiling this volume was to create a text that focuses on this acute symptom that is so commonly encountered rather than produce another book on clinical epileptology since there are many excellent books pertaining to epilepsy. Thus our anticipated audience for this book includes pediatric neurologists and epilepsy specialists as well as general neurologists, pediatricians, general medical practitioners, nurse practitioners, physician assistants, resident physicians in training in many fields (pediatrics, family medicine, emergency medicine) and medical students. It can also serve as a handy reference for emergency medical personnel involved in providing acute care on the field and in transporting patients.

In the first chapter Drs Picot and Roubertie address the definition, classification, and epidemiology of acute pediatric seizures; this chapter also provides a framework for developing a differential diagnosis based on the specific presentation of the child with convulsions or altered mental status. Basic science aspects of the propensity of the developing brain to experience seizures and the nature of developmentally determined vulnerabilities of the maturing brain to prolonged seizures are addressed by Dr. Galanopoulou. The topic of neonatal seizures represents a distinctive range of etiologies, clinical presentations, and suffers from severe limitations in evidence-based treatment guidelines. What is known where research is direly needed are discussed by Drs. Pressler and Mizrahi. The broad range of situations that can

produce acute seizures, their differential diagnoses are detailed by Drs. Datta and Buchhalter. The clinician is often faced with the assessment of paroxysms that mimic seizures, but do not represent an epileptic seizure. Failure to appreciate these spells can lead to unnecessary testing and interventions. Dr. Fernandez-Alvarez's chapter describes such spells and helps the reader distinguish those from seizures.

The special relationship between seizures and fever, including syndromes associated with febrile convulsions are addressed in two chapters authored by Dr Desnous and the editors of this volume.

In the emergency setting, the question as to urgent neuroimaging is an important one. Dr. Salamon discusses the concepts implicit in neuroimaging in that urgent setting, as well as more sophisticated modalities that may be required in select situations to further study the causative "lesion" that may need to be addressed urgently (brain tumor) or if the seizures have the potential to become an enduring problem and emerge poorly responsive to medical therapy (mesial temporal sclerosis, cortical dysplasia). In a companion section, Drs. El Maleh and Sebag provide us with a pictorial essay highlighting commonly encountered (and sometimes rare) structural etiologies. Furthering the theme of neurodiagnostics is a section by Dr Korff on the role of electroencephalogram in the acute evaluation of a seizure or what appears to be altered mental status but may represent non-convulsive status epilepticus or even coma.

Treatment aspects of acute seizures begin with a chapter addressing whether to initiate pharmacologic treatment or not by Drs. Häusler and Kluger. Drs. Dolce and Hartman discuss acute seizures in a person with epilepsy; understanding the concepts here may aid unneeded testing and direct the clinician to counsel the family on some of the causes, and also provide access to rescue therapy. Dr. Lagae's chapter delves into the detail of treating prolonged seizures, while Drs. Hussain and Chabernaud address the important topic of rescue therapy at home and suggestions for emergency medical technicians who evaluate and stabilize the patient on the field, and transport them to a medical facility when indicated.

Once the patient is stabilized, if this is the first presentation of a seizure, next questions are what comes next, what is the diagnosis, even more importantly (and urgently, in the family's mind) what is the prognosis? This where a pediatric epileptologist holds many "trade secrets" that emergency care providers and primary care physicians are not privy to, and are typically found mainly in detailed texts on pediatric epilepsy. Drs. Matsumoto and Lerner provide a valuable and concise summary of clinical and diagnostic features that may help formulate an early assessment of possibilities that may either stress the urgency of further work-up and treatment or assist the health care provider support the anxious family with some measure of reassurance.

The editors identified the scope of this book to be capable of filling an important void in the medical literature addressing the needs of children. The individual authors have strived to meet this need and have done so in a concise and lucid manner. We are pleased to present this volume to the wide audience that may reap benefits from our collective effort.

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