Seizures in Critical Care
Seizures in Critical Care

A Guide to Diagnosis and Therapeutics

Second Edition

Edited by

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Preface to the Second Edition

Seizures in Critical Care: A Guide to Diagnosis and Therapeutics was published in the end of 2004. Based on the communication that my co-authors and I had with various health care providers, it was received very positively and was widely used as a reference book in many Intensive Care Units. It also received reviews in international journals and even from the World Federation of Neurology.

This positive attitude towards the book, and the fact that 5 years have passed since, made us entertain the idea of a second edition. My hope, as I have noted in the Preface of the first edition, was that “… it should constitute a testimony of the paucity of data in the field and become a starting point for well-organized research in the future.” Although each one of us has a special interest in the field of seizures or ICU and follows closely the specific literature, it was the global curiosity to find what really happened during these 5 years—how much more the science has advanced and how much more we know now—that became the motive behind undertaking the daunting task of editing a specialized book like this.

There is new knowledge, indeed: several new studies, new antiepileptic medications, some of them available intravenously, and new published guidelines. This is not distributed evenly, however. Most chapters have undergone extensive revision due to an abundance of new data, few only moderately due to relative paucity of new information. Overall, the book looks fresh and new with the addition of a new chapter on neuromonitoring via continuous EEG in the ICU, complete re-writing of some chapters, addition of new cases with examples of EEGs and MRIs and new tables and figures. Authorities in their fields, Drs Dan Friedman and Larry Hirsch (continuous EEG monitoring), Denise Rhoney (neuropharmacology) and Paul Vespa (non-convulsive seizures in various brain injuries) joined the panel of previous authors to provide pertinent expertise to the readers.

Still a product of collaboration between various experts in the field of intensive care and epilepsy, this new edition is aimed at neurologists, general intensivists, neurosurgeons, and epileptologists. As with the first edition, our hope is that this new book will fulfill the need for more in-depth and specialized knowledge and will help provide specialized management in a very sick patient population.

Detroit, MI
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Panos Varelas, MD, PhD
Seizures are devastating events in one’s life. Their very presence argues for something being wrong with the brain. In many places of the planet, they are still related to spirits or “sacred illness” and considered as either a curse or a reason for awe. Having been married to an epileptologist and been trained at Yale, one of the best Epilepsy centers in North America, I had a strong exposure and could not escape their spell. I became intrigued by the diversity of their presentation and fascinated by the possibility that various simple or complex behaviors, within the normal or abnormal range, could be explained by such an “obsolete” machine such as the electroencephalograph. Later on, after my training as a neuro-intensivist, my interest grew further while I was trying to find treatable causes in somnolent or comatose patients with various brain injuries in the ICU. This simplistic and mechanistic suspicion, that the patient’s clinical status was due to an electrical discharge of the brain, led, I am sure, to several unnecessary requests for EEGs and trials of antiepileptics. Fortunately, I also had some unexpected successes.

Then, I started looking at the issue more closely and had revealing discussions with my peers, especially those who were not neuro-intensivists. To my surprise, two facts emerged: first, many in the ICU community, did not know what to seek, what to expect and how and when to treat; and second, while reviewing the literature, I could not find too much. Most of the articles were reporting small, uncontrolled series or personal experience. Few studies were conducted in the complex environment of an ICU. Very often, as with my personal experience, doubts regarding the epileptic nature of the phenomenon lingered. EEG, the gold-standard test, was difficult to interpret or inconsistently ordered. Seizures could be explained by more than one mechanism in many cases. In other cases, the response could be attributed not so much to the administration of the usual antiepileptics, but to the correction of more systemic derangements. Interaction between ICU medications and antiepileptics were frequent and puzzling to the treating physicians. Several of antiepileptics were either not available for parenteral administration or contraindicated due to specific organ failure. Finally, the newer antiepileptics were not well known and seldom used in the ICU.

Therefore, it did not take me too long to decide about the need for editing a book regarding seizures in the ICU. *Seizures in Critical Care: A Guide to Diagnosis and Therapeutics* is a collaborative effort. Experts in both the ICU and epilepsy fields mainly from North America but also from Europe contributed Chapters in
this book. I tried to confine the content to the most common and interesting in the ICU, however. Norman Delanty’s excellent book served as the starting point in many cases, but the scope was different. This book is much more balanced towards central nervous system insults, which can occur in the ICU. I encouraged reference to personal experience and included many real ICU cases with EEGs and neuroimages. Where data were lacking or information was contradictory, a very common situation indeed, the authors were advised to provide raw data and expert advice to the reader. Treatment of ICU seizures, most of the time uniform, is included in a separate Chapter. If more specific treatment is needed, for example pyridoxine for isoniazide-induced seizures, it is mentioned in the appropriate Chapter. Overall, our hope is that this book can serve as a useful aid in the everyday ICU and neurological practice for intensivists, neurologists, neurosurgeons, and any other health care professional or student in this expanding field. Most importantly in my mind, but less directly, it should constitute a testimony of the paucity of data in the field and become a starting point for well-organized research in the future.

Lastly, I would like to dedicate this effort to my parents, my grandfather (the shining star of my life) and all my teachers, who taught me the “ζί&epsi;&omicron;”- living- and “ευ ζί&epsi;&omicron;”- living well- of the ancients. I am also very grateful to all my co-authors, who did an excellent job and especially to my wife, Marianna, for her indirect contribution and support.

Detroit, MI
February 2004

Panos Varelas, MD, PhD
The first edition of *Seizures in Critical Care: A Guide to Diagnosis and Therapeutics*, which appeared in 2005, filled an important need in the armamentarium of the neurological, neurosurgical, and medical intensivists who deal with seriously ill patients in the ICU setting. Unlike epilepsy, as it usually presents in the outpatient department, seizures in ICU patients are nearly always secondary phenomena that signify that something is seriously amiss in very ill patients with primary medical or surgical disease. The job of the intensivist is to identify the cause of the seizure or seizures, examine the myriad of potential contributing factors, and provide appropriate management and treatment that takes all aspects of the patient’s illness into consideration. As in the first edition, Dr. Varelas and his associates recognize the extreme importance of prompt recognition, diagnosis, and sophisticated management of seizures in this group of seriously ill patients. Dr. Varelas has now recollected his group of contributors and produced a new and up to date compendium of what one needs to know in order to work effectively in this difficult and demanding area. A welcome addition to the new edition is the chapter by Friedman and Hirsch on the role of continuous monitoring in the ICU which is essential for the diagnosis and treatment of nonconvulsive seizures as these may be the most common form of seizures in this setting but are often missed in the evaluation of patients in stupor or coma. Recent technologic advances are described which allow for the simultaneous continuous monitoring of multiple ICU patients using new methods of data acquisition and analysis that allow for rapid and real-time transmission of information to the clinicians caring for the patient. The chapters on seizures due to metabolic causes and drug-induced seizures have new co-authors and have been revised and expanded while the other chapters have all been updated with new information and references. As in the first edition of this book, the issues discussed are all addressed with great common sense and sophistication by the very qualified contributors to this volume.

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Contents

1 Presentation and Pathophysiology of Seizures in the Critical Care Environment: An Overview ......................................................... 1
  Marek A. Mirski

2 Diagnosing and Monitoring Seizures in the ICU: The Role of Continuous EEG for Detection and Management of Seizures in Critically Ill Patients ......................................................... 21
  Daniel Friedman and Lawrence J. Hirsch

3 Stroke and Critical Care Seizures .................................................... 49
  Panayiotis N. Varelas and Lotfi Hacein-Bey

4 Traumatic Brain Injury and Seizures in the ICU ................................ 119
  Andrew Beaumont

5 Brain Tumors and ICU Seizures ...................................................... 137
  Efstatios Papavassiliou and Panayiotis Varelas

6 Global Hypoxia–Ischemia and Critical Care Seizures .................... 157
  Matthew A. Koenig and Romergrlyko Geocadin

7 Seizures in Fulminant Hepatic Failure, Multiorgan Failure, and Endocrine Crisis ................................................................. 179
  Andrew Beaumont and Paul M. Vespa

8 Seizures in Organ Transplant Recipients ........................................ 203
  Tarek Zakaria, Eelco F.M. Wijdicks, and Greg A. Worrell

9 Extreme Hypertension, Eclampsia and Critical Care Seizures ......... 219
  Errol Gordon and Michel T. Torbey

10 Infection or Inflammation and ICU Seizures ................................. 233
    Wendy C. Ziai and Mohammed Rehman

11 Electrolyte Disturbances and Critical Care Seizures ..................... 263
    Jenice Robinson and Jose I. Suarez
12 Alcohol-Related Seizures in the Intensive Care Unit ................. 283
   Zachary Webb and Panayiotis Varelas

13 Drug-Induced Seizures in Critically Ill Patients ..................... 307
   Denise H. Rhoney and Panayiotis N. Varelas

14 Critical Care Seizures Related to Illicit Drugs and Toxins .......... 341
   Andreas R. Luft

15 Management of Status Epilepticus and Critical Care Seizures...... 355
   Panayiotis N. Varelas and Marianna V. Spanaki

Index ........................................................................................................ 423
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