This book provides a concise overview of the possible clinical applications of standard EEG in clinical psychiatry. After a short history, the book describes the physiologic basis of the EEG signal, then reviews the principles of EEG in terms of technical backgrounds and requirements, EEG recording and signal analysis, with plentiful illustrations of the most frequent biological or technical artefacts. Normal EEG patterns and waveforms for easy reference are clearly presented, before the detailed description of abnormal patterns.

With the basic information in hand, the reader progresses to an account of the role of EEG in the diagnostic work up in psychiatry, covering nonconvulsive status epilepticus, frontal lobe seizures and non-epileptic seizures. The clinical application of EEG in both childhood and adult disorders follows, including many case vignettes. The effects of psychotropic drugs on EEG are highlighted.

The book closes with a discussion of currently available certification venues for Clinical Neurophysiology along with limitations of each venue. It calls for the development of training guidelines and certification processes specific to Psychiatric Electrophysiology.

The material is clearly presented throughout, with plenty of figures, tables with summaries of relevant findings, flow diagrams for diagnostic work-up, boxes with learning points, and short lists of key references.

We fully expect the book will become the standard teaching source for psychiatry residents and fellows, as well as a useful resource for practising psychiatrists and clinical psychologists.
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Standard Electroencephalography in Clinical Psychiatry

A practical handbook

Edited by

Nash Boutros
Wayne State University School of Medicine, Detroit, MI, USA

Silvana Galderisi
Department of Psychiatry, University of Naples SUN, Naples, Italy

Oliver Pogarell
Ludwig-Maximilian-University of Munich, Munich, Germany

Silvana Riggio
Mount Sinai School of Medicine and James J. Peters VAMC, New York, NY, USA
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List of Contributors

Nash Boutros, MD Professor of Psychiatry and Neurology, Wayne State University, School of Medicine. 2751 E. Jefferson, Detroit, MI 48207, USA

Paola Bucci, MD, PhD Assistant Professor of Psychiatry, Department of Psychiatry, University of Naples SUN, Largo Madonna delle Grazie, 8018 Naples, Italy

Silvana Galderisi, MD, PhD Full Professor of Psychiatry, Department of Psychiatry, University of Naples SUN, Largo Madonna delle Grazie, 8018 Naples, Italy

Armida Mucci, MD, PhD Assistant Professor of Psychiatry, Department of Psychiatry, University of Naples SUN, Largo Madonna delle Grazie, 8018 Naples, Italy

James J. Peters, VAMC New York, NY 10029, USA

Oliver Pogarell, MD Associate Professor, Neurologist, Psychiatrist, Department of Psychiatry and Psychotherapy, Ludwig-Maximilian-University of Munich, Nussbaumstr. 7, D-80336 Munich, Germany

Silvana Riggio, MD Professor of Psychiatry and Neurology, Mount Sinai School of Medicine and James J. Peters VAMC, New York, NY, USA

Mary Roberts, MD Clinical Associate Professor of Psychiatry, Wayne State University, School of Medicine, 2751 E. Jefferson, Detroit, MI, 48207, USA

Felix Segmiller, MD Department of Psychiatry and Psychotherapy, Ludwig-Maximilian-University of Munich, Nussbaumstr. 7, D-80336 Munich, Germany

Sophia Wang, MD Psychiatry Department, Mount Sinai School of Medicine, New York, NY, USA
Preface

Electroencephalography (EEG) is an important, non-invasive functional method for the investigation of electrical activity in the brain. EEG alone, or at times in combination with video EEG monitoring, is a very useful tool in the differential diagnosis of psychiatric and/or neurological presentations. It can also be useful for monitoring and helping to evaluate the clinical or therapeutic course of psychiatric disorders and to guide treatment plans.

The idea of a practical handbook on *Standard Electroencephalography in Clinical Psychiatry* was originally conceived by Dr N. Boutros following many discussions amongst members of the EEG and Clinical Neurosciences Society. These discussions concerned the relative roles of the standard (visually inspected) EEG (EEG) and the quantified EEG (QEEG) in clinical psychiatry. They resulted in the firm conclusion that both techniques are important and that they are complementary. While a number of texts addressing QEEG applications in psychiatry have been published in recent years, the last book addressing EEG in psychiatry was that by John R. Hughes and William P. Wilson [1] from 1983. We therefore started to compile this book, which integrates our combined knowledge and will serve as a comprehensive and practical guide to assist psychiatrists in clinical decision making using EEG.

This book was envisioned as a practical guide to assist psychiatrists in clinical decision making using EEG. It reviews the basics of a normal and abnormal EEG exam, the value and the limitations of EEG testing and its clinical indications. Specific clinical pitfalls and pearls, that are ‘red flags’, in the EEG assessment are stressed throughout the book.

Despite the fact that we have had the ability to record brain electrical potential since 1924 and that this work was spearheaded by Dr Berger, a psychiatrist, to this day the significance of some EEG changes present in psychiatric patients remains poorly understood. The scalp-recorded visually inspected standard EEG is an under-utilised tool in the assessment of patients with a psychiatric diagnosis: failure to utilise this tool may contribute to a delay in making an accurate diagnosis and initiating appropriate therapy. The EEG is an essential tool in the differential diagnosis of neurological versus psychiatric disorders, especially when performed in correlation with the clinical manifestations and when special techniques such as video monitoring recording are used.
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PREFACE

The goals of this book are to provide a brief historical perspective of EEG in psychiatric practice; to provide an understanding of the physiologic bases of the EEG signal and of the basic elements of EEG recording; to review normal and abnormal EEG patterns; and to provide the psychiatrist with a clear understanding of both the value and limitations of EEG testing and its clinical indications in the diagnostic work up as it applies to psychiatric patients.

There is detailed coverage of the role of EEG in:

1. the evaluation of non epileptic seizures;
2. the differential diagnosis of the behavioural manifestations of seizures of frontal lobe origin;
3. the differential diagnosis of nonconvulsive status epilepticus;
4. the evaluation of childhood psychiatric disorders;
5. the assessment of the patient with psychosis, mood disorders and catatonia;
6. the assessment of personality disorders and anxiety disorders;
7. the differential diagnosis of delirium versus dementia and its differentiation from a primary mood, anxiety or psychotic disorder.

After an historical review, Chapters 2 and 3 provide a synopsis of the physiologic bases of the EEG and its recording and analysis methodology. Chapters 4 and 5 then summarise the most important normal and abnormal EEG patterns. These chapters are not meant to be comprehensive: the interested reader is referred to the many available EEG atlases.

Chapter 6 emphasises the potential of the EEG in the evaluation of behavioural manifestations in order to help reach a clinical diagnosis and develop an appropriate treatment strategy. The following chapters address the application of this technique in specific groups of disorders, starting with developmental disorders, that is ADHD, autism, conduct disorders and learning disabilities even in the absence of seizures. Helpful guidelines are provided for when to use an EEG in the evaluation of these entities.

Chapter 8 discusses possible EEG findings in the evaluation of psychosis, mood disorders and catatonia with particular reference to their prognostic implications and addresses the differential diagnosis with general medical conditions. This is followed by chapters on personality disorders and anxiety disorders and on delirium and dementia.

Chapter 11 describes the effects of psychotropics drugs on the EEG. It includes a discussion of data indicating the usefulness of EEG in the diagnosis of drug-induced CNS side effects or toxicity.
PREFACE

The final chapter highlights the need for training guidelines and certification processes specific to Neuropsychiatric Electrophysiology and the issues involved in developing training programmes and certification.

Throughout the book, the authors provide specific illustrations of the different EEG patterns and review various technical artefacts. These illustrations will enable the reader to have a clear understanding of both the value and limitations of EEG testing and its clinical indications. Helpful clinical vignettes, together with well designed summary tables and flow diagrams, support the application of EEG in the differential diagnosis of psychiatric and neurological illnesses. An overall goal of the volume is to make the point that EEG abnormalities (whether focal or diffuse slowing, abnormal background rhythms, or epileptiform activity) represent important findings that must be taken into consideration when formulating a biopsychosocial understanding of an individual patient.

Reference


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