Case Studies in
POLYSOMNOGRAPHY
INTERPRETATION
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INTERPRETATION

Edited by
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Preface

This volume began as a series of workshops in polysomnogram interpretation and is intended to afford the reader a unique opportunity to match her/his own expertise and interest in interpreting polysomnograms with national and international expert polysomnographers. The authors, experts in adult and pediatric sleep medicine, offer examples of important polysomnograms and clinical cases directly from their own sleep laboratories: not idealized or touched up, these are the “real life” tracings as they were recorded.

The authors have provided detailed descriptions of their interpretative thought processes as well as relevant references, such that the reader is able to, in a sense, sit with these experts as they work through their own interpretations. By design, many of the incorrect choices the reader is offered look appealing and plausible, and often the precise answer turns on a master point of view rather than any hard and fast “rule.” The authors do not, however, claim that theirs is the only possible interpretation of the tracings and data which appear here: polysomnogram interpretation is an art as well as a science. It is also stressed that the terms “correct” and “incorrect,” which accompany each case in this volume, refer to a specific expert author’s interpretation of the polysomnogram displayed in the clinical setting in which it was created. The reader may well have an explanation that differs from the author’s as presented here, and to the extent that it is a rational and justified interpretation, this volume will have done its job: encouraging expert and refined consideration and analysis of vital aspects of polysomnography.

Because we have stressed the reader’s ability to form her/his own interpretation of the polysomnogram tracing in the context of the case, we have not provided a traditional format of topics and chapters. Rather, we have arranged cases in alphabetical order of the first author and have provided a table of contents with a short title for each case history. In this way, we expect that as the reader works through a specific authors’ cases and polysomnogram examples (arranged in alphabetical order), she/he will come to the cases and polysomnogram examples with the challenge of the interpretation intact, without a prior knowledge regarding whether the case primarily depicts a respiratory, cardiac, neurologic, circadian, or parasomnia disorder, although there will be certain natural clustering of cases from some authors. The reader will also be able to consult the index to pursue a specific type of abnormality if she/he prefers that style of working through these cases.

The reader is encouraged to form her/his own answer prior to checking the authors’ interpretation of correct and incorrect answers, which appear in the second part of the book (pp. 137–206).

The interpretations and clinical suggestions herein are strictly the opinion of the authors; such interpretations may not necessarily apply to a specific patient of the reader’s, and the intent here is expressly not treatment but polysomnogram interpretation, although it is important that the context of the interpretation be fully understood and accounted for.

Further, this volume is not specifically designed as a “board review” of sleep medicine. Nevertheless, it is expected that the reader who is able to work through the correct and incorrect interpretations of the polysomnograms displayed in these cases in a thorough and reasoned fashion will have gone far in attaining important and relevant expertise in all of these aspects of sleep medicine, and should be able to bring enhanced and indeed commanding skills to any examination situation, as well as to the interpretation of polysomnograms in her/his own practice.

I thank each of the authors, who contributed their expertise, time, and devotion to teaching and polysomnographic reasoning to create this volume, and the publishers, particularly Jane Seakins and Nicholas Dunton, whose insight, collaboration, and hard work was invaluable in bringing this text to the form in front of you.

We welcome your comments and suggestions regarding this format and the topics and interpretations herein. Good interpretation, and good health to your patients.

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FURTHER READING
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<th>Abbreviation</th>
<th>Description</th>
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<td>A1</td>
<td>left mastoid (ear) referential EEG</td>
</tr>
<tr>
<td>A2</td>
<td>right mastoid (ear) referential EEG</td>
</tr>
<tr>
<td>Abd/Abdo</td>
<td>abdominal respiratory inductance plethysmography</td>
</tr>
<tr>
<td>AHI</td>
<td>apnea hypopnea index</td>
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<td>AASM</td>
<td>American Academy of Sleep Medicine</td>
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<tr>
<td>AV</td>
<td>atrioventricular</td>
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<td>BMI</td>
<td>body mass index</td>
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<td>C2, C3, C4</td>
<td>right central referential EEG</td>
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<td>Cz-Oz</td>
<td>midline central, occipital EEG</td>
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<td>CHEST</td>
<td>thoracic respiratory inductance plethysmography</td>
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<td>CO2 wave</td>
<td>end-tidal partial pressure</td>
</tr>
<tr>
<td>COPD</td>
<td>chronic obstructive pulmonary disease</td>
</tr>
<tr>
<td>CPAP</td>
<td>continuous positive airway pressure</td>
</tr>
<tr>
<td>CPRESS</td>
<td>positive airway pressure signal (positive deflection upwards)</td>
</tr>
<tr>
<td>Cz-Oz</td>
<td>midline central, occipital EEG</td>
</tr>
<tr>
<td>E1, E2</td>
<td>left and right referential EOG</td>
</tr>
<tr>
<td>ECG/EKG</td>
<td>electrocardiogram/precordial ECG</td>
</tr>
<tr>
<td>ECGL-ECGR</td>
<td>electroencephalography/electroencephalogram</td>
</tr>
<tr>
<td>EMG Tib/EMG</td>
<td>right and left leg EMG</td>
</tr>
<tr>
<td>EOG</td>
<td>electro-oculography/electro-oculogram</td>
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<tr>
<td>EPAP</td>
<td>expiratory positive airway pressure</td>
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<tr>
<td>ET\textsubscript{CO2}</td>
<td>end-tidal partial pressure</td>
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<tr>
<td>F3</td>
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<tr>
<td>F4</td>
<td>right frontal referential EEG</td>
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<tr>
<td>Flow</td>
<td>airflow derived from pressure signal</td>
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<tr>
<td>Fz-Cz</td>
<td>midline frontal, central EEG</td>
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<tr>
<td>HR</td>
<td>heart rate</td>
</tr>
<tr>
<td>ICSD</td>
<td>International Classification of Sleep Disorders</td>
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<tr>
<td>L Leg</td>
<td>left pretibial EMG</td>
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<tr>
<td>LAT</td>
<td>left anterior tibialis EMG</td>
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<tr>
<td>LEOG</td>
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<tr>
<td>LOC</td>
<td>left eye referential EOG</td>
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<tr>
<td>MRI</td>
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<tr>
<td>MSLT</td>
<td>multiple sleep latency test</td>
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<tr>
<td>MWT</td>
<td>maintenance of wakefulness test</td>
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<tr>
<td>N/A</td>
<td>oronasal thermistor</td>
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<tr>
<td>NAF</td>
<td>nasal pressure transducer</td>
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<tr>
<td>NREM</td>
<td>nasal pressure transducer non-rapid eye movement</td>
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<td>O1, O2</td>
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<td>OSA</td>
<td>obstructive sleep apnea</td>
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<td>OSAT</td>
<td>O\textsubscript{2} saturation by oximetry (Sp\textsubscript{O2})</td>
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<tr>
<td>Pac\textsubscript{O2}</td>
<td>partial pressure of O\textsubscript{2} arterial</td>
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<tr>
<td>Pao\textsubscript{2}</td>
<td>partial pressure of CO\textsubscript{2} arterial</td>
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<tr>
<td>PAP</td>
<td>positive airway pressure</td>
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<td>PTAF</td>
<td>nasal pressure transducer pulse rate from pulse oximetry</td>
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<td>RERA</td>
<td>respiratory effort-related arousal</td>
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<td>ROC</td>
<td>right eye referential EOG</td>
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<td>RLS</td>
<td>restless leg syndrome</td>
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<tr>
<td>Abbreviation</td>
<td>Description</td>
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<td>Snore (SNORE, Snore5, PSnore, SNOR)</td>
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<td>Sono</td>
<td>snoring channel</td>
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<td>sleep-onset REM sleep</td>
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<td>SSRI</td>
<td>selective serotonin reuptake inhibitor</td>
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<td>summation of abdominal and thoracic respiratory inductance plethysmography</td>
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<td>TCco2</td>
<td>transcutaneous CO2</td>
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<td>Therm (THERM, Therm6)</td>
<td>airflow via oronasal thermistor</td>
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<tr>
<td>Tho (THO, THOR, Thorax7)</td>
<td>thoracic respiratory inductance plethysmography</td>
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